

AUTOMOTIVE INDUSTRIES

The **AUTOMOBILE**

Reg. U. S. Pat. Off.



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Automotive Industries

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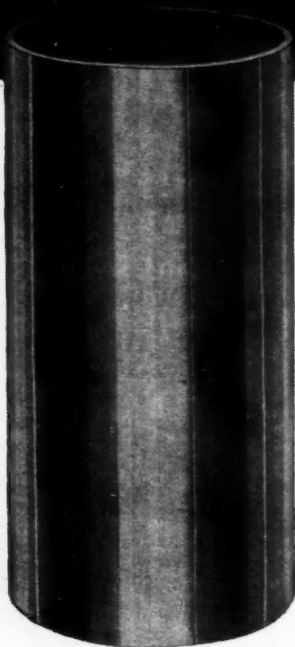
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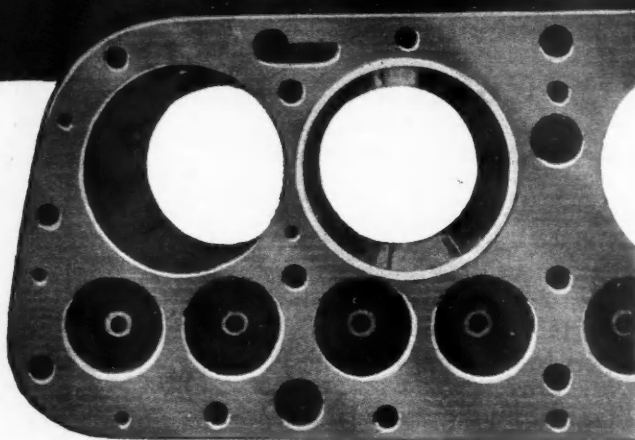
WARREN OHIO

October 7, 1933

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● Sealed Power Nickel-chromium sleeve of the dry or pressed-in type. Extensively used in old, worn-out engines.



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In fact, The Sealed Power Corporation finds that the use of this alloy containing Nickel makes cylinders *better than new* because it is absolutely free from hard spots and porosity and gives a high

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Because they "perform better longer" there is a marked trend toward the use of Nickel Cast Irons not only for cylinder sleeves but for cylinder blocks, pistons, valve sleeves, differential spiders, transmission cases, brake drums and other important automotive castings. Our engineers will be glad to forward data on the most suitable applications for these dense, wear-resisting cast irons; and to assist you in selecting proper compositions.



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Parts Industry Fights for Forty Hour Maximum Week

Davis and Carlton combat application of 35 hour limit in automobile code at public hearing—Last ditch battle for "Merit" clause foreshadowed.

by Don Blanchard

Editor of Automotive Industries

A SEPARATE and distinct industry with its own peculiar problems demanding individualized handling, was the picture of the automotive parts and equipment industry its spokesmen presented at the public hearing in Washington on Oct. 3 on the code of fair competition filed with NRA by Automotive Parts and Equipment Manufacturers, Inc.

This point was stressed strongly by both Charles S. Davis and C. C. Carlton, respectively president and executive vice-president of A.P.E.M., who represented the industry at the hearing for the reason that "members of the Na-

tional Recovery Administration have expressed the opinion . . . that our industry should accept the same provisions as to wages and hours of work as those for the automobile manufacturing industry." Any attempt to reduce maximum hours from the 40 average proposed in the A.P.E.M. code to the 35-hr. average approved in the N.A.C.C. code, consequently, may be expected to meet with determined resistance from the parts industry. It also was clearly indicated that the parts and equipment manufacturers are prepared to put up a last-ditch

fight for the inclusion of the "merit" clause as approved in the automobile manufacturing code.

Raising the grim spectre of social unrest, William Green, president of the American Federation of Labor, attacked the wage and hour provisions as being inadequate to absorb the industry's unemployed and to raise their purchasing power. He recommended a 30-hr. week with time and a half for overtime up to 36 hrs. as an absolute top and 55 cents an hour as the basic minimum wage with no distinction between sexes. This compares with the 40-hr. average, 48-hr. maximum and the 40 and 35 cent basic minimum wages for men and women respectively in the proposed code. Mr. Green also urged that labor be represented on the code authority. Inasmuch as Mr. Green's brief closely paralleled that presented at the N.A.C.C. hearing and summarized in *Automotive Industries* of Aug. 26, it is unnecessary to discuss it here. The only other recommendation made by labor was that the code provide for a dismissal wage of 10 cents for each hour worked to be paid to workers discharged before

"The chief need of the hour is to lessen and remove, not to create new uncertainties. Free from continuing fear of experiments in Government, industry will venture those commitments against the future which the probability of continuing change makes it hesitate to do."—From the brief of the automotive parts and equipment industry presented at the public hearing on its code.

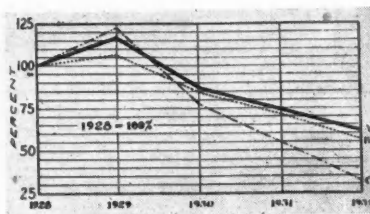
completing 330 hrs. work in preceding three month period.

It is interesting to recall that Mr. Green made substantially the same recommendations at the N.A.C.C. hearing, except that in that case he advised a 60 cent minimum. Moreover, the fact that Mr. Green appeared personally at the hearing while the annual meeting of the A. F. of L. was in progress in a nearby hotel, is an indication of the interest of organized labor in the automotive industry.

The major recommendations made by the NRA consumers' advisory board were (1) that the code provide that prices were not to be raised before Dec. 31, 1933 except where present prices were below cost and (2) that S.A.E. handbook be made a part of the code. The intent of the latter recommendation was not made clear, but presumably the consumer advisors had the idea that this would protect the public against reductions in quality.

The code was presented at the hearing by A.P.E.M. with approval of both the Motor and Equipment Manufacturers Association and the National Standard Parts Association, the combined membership of the three organizations eliminating duplications being 634 manufacturers. These manufacturers were said to represent 80 per cent of the sales volume of the 800 manufacturers considered to belong to the industry. The only objection raised to the code from the producing element in the industry, was voiced by Ernest Holmes, representing the Ernest Holmes Co., the Rotary Lift Co. and the Oildraulic Lift Co., all of Tennessee. Mr. Holmes asked that minimum wages for manufacturers in Tennessee be set at 15 cents below the code figure.

To combat the theory that the



Effects of depression on volume: A, automotive parts and equipment; B, general manufacturing; C, motor vehicles

parts and equipment industry should be subject to the same maximum hour limitation as the motor vehicle industry, both Mr. Davis and Mr. Carlton emphasized the fact that their industry supplied not only original equipment to the car makers but that a substantial share of its volume came from the after-market created by the operation of more than 20,000,000 cars. Consequently, they pointed out, the parts industry was not subject to the same cyclical and seasonal influences. In addition, they brought out that the business was divided among 800 widely-scattered companies, many of them located in small towns where the labor supply was limited, as contrasted with the relatively centralized organization of the motor vehicle industry.

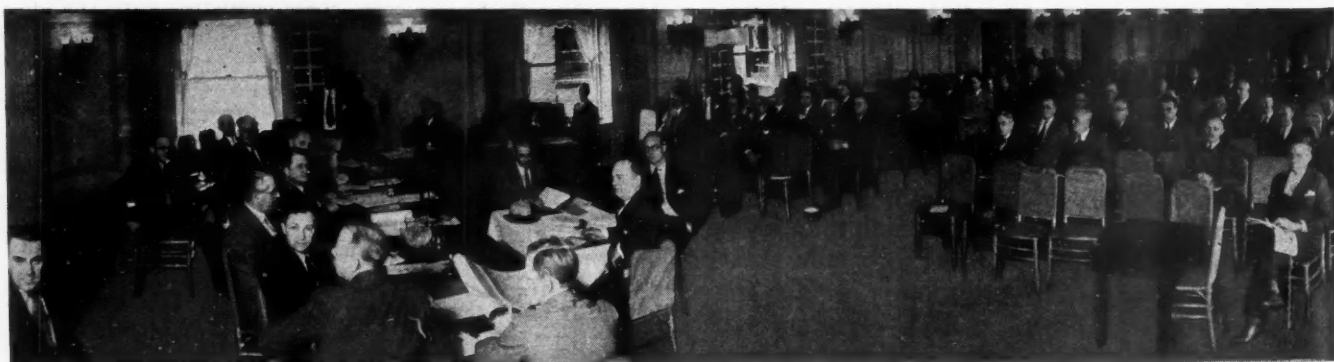
Longer maximum hours are justified in the parts and equipment industry, Mr. Carlton contended, because its after-market business made it less subject to cyclical changes in sales volume. Since its business had declined less during the depression than had motor vehicle manufacture, the parts industry "does not have as serious an unemployment problem as the automobile manufacturing industry." To support this contention, Mr. Carlton presented the chart repro-

duced herewith which shows that in 1932, the volume of the parts makers was 61 per cent of 1928 as contrasted with 32 per cent for the car makers. Data also were presented showing that as the production of new cars declines, a relatively larger portion of the man-hours per car in the general automotive field are performed in the parts industry.

The chart also shows that the parts and equipment industry has a stability equal to that of general manufacturing. Commenting on this, Mr. Carlton said many parts makers "manufacture a large variety and volume of products that are consumed in other industries and thus still retain their status and seek such outlets for other products as plants classified as general manufacturing plants. Therefore, the employment provisions that are or may be embodied in industry codes for general manufacturing industries must necessarily apply more closely to our industry as a whole rather than the provisions which are adaptable to some highly specialized and geographically concentrated industry such as the automobile manufacturing industry."

The theory that parts plants should be subject to the same hours limitations as vehicle factories was attacked from another angle by Mr. Davis who had in mind the fact that the N.A.C.C. code expires Dec. 31, 1933. He said: "... in testing out the fairness and reasonableness of the provisions of our code a more representative period should be chosen than during the late fall weeks, for obviously the setting of work hour and wage provisions on the basis of an industry's lowest period of activity will work a great hardship upon that industry when

(Turn to page 430 please)



C. C. Carlton, at the far end of the table, is about to begin his presentation at the A.P.E.M. code hearing. Deputy Administrator K. M. Simpson presided

JUST AMONG OURSELVES

Now Who Is What?

WHEN the dog bites the man—

Well, here's one that certainly falls into that category.

The recently organized Federated Truck Association of America, since absorbed by American Trucking Associations, Inc., passed a resolution calling on President Roosevelt and others to exercise the necessary authority to prevent railroads from reducing rates below the cost of service in an attempt to destroy motor truck competition. The railroads have been establishing less-than-cost rates, the Association claims, to meet truck competition.

* * *

The Expected Is Arriving

THE labor disturbances expected by many automotive executives have begun, numerous strikes and attempted strikes already having taken place in various automotive plants as well as in factories of all kinds throughout the country.

Thus far there is no indication that these difficulties will reach major proportions nor that they will effect serious stoppages of production. Most of them are in the nature of tests of strength on the part of worker groups in general and A. F. of L. organizers in particular. That the labor clause of the NRA codes gives the unions encouragement to start controversy about a multitude of petty considerations

is unquestionable, however the various arguments may be settled.

Almost every labor move of every plant is open for challenge by some one who may be looking for a chance to start an argument—and the indications are that many will be started in the early months of NRA operation.

Practical manufacturing men are not lying awake nights worrying about the situation. They are confident that final arbitrations will support fair practices. They know, too, that a sufficient amount of guerrilla warfare, based on a desire to harass employers rather than to correct real abuses, eventually will alienate public sentiment.

Labor's success in this situation, just as the success of the employing group, in the long run will rest on the economic soundness and the ethical fairness of the causes and the principles battled for.

* * *

And the Wind Blows—

BARGAINING between fundamental competitors is the essence of trade union-employer relationships.

Argument among partners seeking the same mutual end is the essence of the relationships between employee representation committees and employers.

This idea was expressed not long ago by a man whose experience in industrial relations is second to none when he said something like this:

"The relationship between the boss and the worker has been an evolutionary one. First, there was the master and the slave; then came feudalism; then the craftsmanship period; then bargaining through unions; and finally, in a number of instances, cooperative action.

"My objection to the labor provisions of the NRA codes lies chiefly in the fear that they might turn that evolutionary trend backward—that they might hinder the movement toward greater cooperation and force a return toward the purely competitive bargaining concept."

* * *

Confidence in Spring Sales

IT is fair to say that executives right now continue to be hopeful as regards fall business and confident that the Spring selling season next year will better that of 1932 by a good margin.

There is a general belief, but no abiding certainty, among most men in the industry that "everything is going to be all right."

With sales holding up well for this time of year, new model announcements in general are being pushed backward rather than forward, due to a natural desire to get all the production possible from present dies and tools.

Engineering departments are keyed to a high pitch, getting ready for new models. Work in this division is proceeding as fast as possible on the theory that any change in sales trends might mean a sudden setting forward of new model announcement dates. The technicians in general will be glad if present plans are adhered to, and new model announcements concentrated around the time of the New York Show.—N.G.S.

EQUIPMENT MAINTENANCE RECORDS—

WHEN we asked a representative group of production executives the question: How much maintenance expense justifies the retirement of a machine tool?—they voted that common sense or judgment values rather than any arbitrary rules usually provide the answer.

This is to be expected in view of the many variables that complicate the maintenance problem in any manufacturing plant. Nevertheless, there are important factors affecting company welfare in the background which demand a more scientific basis for judgment values.

Preeminent among these factors are the intangible or hidden expenses in the overhead account. In every organization there has been a determined drive to segregate these expense items and put them where they belong in the factory budget. Do we know just how much factory maintenance really costs? Are we certain that all the costs chargeable to the maintenance of machine tools, fixtures, and general production equipment are labeled properly in the budget? And finally, how sure are we that some items of equipment aren't taking more maintenance than they should?

The point is that if we knew the answer positively, it might be possible to put our finger on certain equipment that isn't earning its keep. And the company would save money by replacing it with new and more efficient machines.

That is why in the paper¹ read at the recent International Automotive Engineering Congress at Chicago, we pointed to the growing recognition of the need for an individual card record for each piece of productive equipment, giving such pertinent information as:

¹ "Executive-Factory Liaison Clears Moot Points in Equipment Buying," by Joseph Geschelin, engineering editor, Automotive Industries, S.A.E. Journal, September, 1933; Automotive Industries, August 26, 1933.

original cost, date of purchase, hourly output, product cost and a running record of maintenance charges. Despite arguments to the contrary, many well informed people believe that such a record would not be expensive to maintain. Moreover, the information it provides should be well worth the extra effort.

These aspects of maintenance haven't occupied much space in current discussion of management problems. Yet they are of prime importance because maintenance has a bearing on the following points:

1. Assurance of continuous performance
2. Freedom from breakdowns
3. Reduction of spoilage and rejections
4. Increased machine efficiency and adequacy

Another point to be considered is that an accurate record of the equipment giving cumulative repair and overhaul charges can be used to compare the quality of similar machines but of different make or model.

Incidentally, for the purpose of this discussion we can say that the machine record is of importance chiefly on production equipment having relatively long life, thus eliminating for the moment, not only the special machines whose replacement is controlled largely by obsolescence, but also the long lived tool room equipment.

Out of the mass of apparently elusive variables, we can agree that in general the need for a major overhaul should be the starting point for deciding whether or not it would be more economical to buy a new machine. Certainly it should

OPERATION _____		MACHINE EQUIPMENT RECORD																							
MACH MFD BY _____		SERIAL NO. OF DUPLICATE MACHINES INVOLVED _____																							
TYPE _____ SERIAL NO _____		_____																							
DATE OF SURVEY	YEAR OF PURCHASE	% EFFICIENCY COMPARED TO NEW TYPE	GENERAL CONDITION																						
			GOOD, FAIR, POOR																						
			QUALITY OF WORK																						
			EXCELLENT																						
			GOOD, FAIR																						
	TYPE OF NEW MACHINE	COST OF CHANGE	COST OF REPAIRS																						
		NECESSARY	IF NECESSARY																						
			COST OF OVERHAULING IF NECESSARY																						
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Form 21's Copyrighted 1921 Union Special Machine Co

Printed in U. S. A

Form of machine record being used by the Union Special Machine Co.

by Joseph Geschelin

Engineering Editor,
Automotive Industries

Do We Know They Aren't Worth Enough to Justify the Expense of Keeping Them?

warrant at least an inquiry before the appropriation for the work is approved. Although the guesses vary, it seems that the danger signal should be set when the overhaul involves an expenditure amounting to 10 to 20 per cent of the original cost. This figure will vary, of course, but the important thing is to set some definite par value in keeping with the individual problem.

In applying this par, calculation of the economy of replacement is made on the basis of present replacement costs for modern equipment of the same type.

Laudable progress has been made recently in the direction of placing maintenance on some economical basis comparable to the management of direct labor. The chief obstacle to setting rates or efficiencies or the establishment of a controllable routine for maintenance groups, has been the impracticability of standardizing such operations, and the difficulty of anticipating the needs for repairs or overhauling.

But progress has been made. One method of attack has been to place the burden of maintenance on the shoulders of the head of the department. Thus the foreman is charged directly in his departmental budget with all maintenance expense. It's up to him to watch machine condition and requests for service come through on requisitions signed by him.

Another form of control aims at attaining a definite balance between

overhead and productivity. This is accomplished by setting up a relation between maintenance and productive labor for each department based on previous experience. Then as production goes up or down, the maintenance budget attempts to move in the same direction. To avoid the pitfall in this arrangement, it is necessary to make sure that the proper ratio between maintenance and direct labor has been chosen. It must not be forgotten that previous experience going back five or six years is based generally on a larger direct labor payroll and consequently the real current ratio may have to be higher to compensate for a larger capital investment as contrasted with a relatively smaller direct labor charge.

However, it is safe to say that in most forms of control a good deal of reliance is placed on the human equation. And the more the maintenance budget shrinks, the more likelihood there is of skimping needed repairs which eventually grow into a breakdown or the need for a major overhaul. There is more reason therefore for accurate records and a definite par or danger signal when an overhaul is imminent.

Now, actually, the maintenance account doesn't tell the whole story. It is necessary also to consider obsolescence and inadequacy despite the fact that they are separate problems in their own right. Suppose we establish by scientific methods at hand that the maximum

production out of a given machine is a certain figure and we make that 100 per cent; perfect work also is rated 100 per cent. If a machine depreciates through use so that it is producing only 80 per cent of its rated output, and if it runs 10 per cent rejects so that this efficiency is only 90 per cent, the overall efficiency becomes only 72 per cent.

The old machine is losing 28 per cent. And when there is a demand for expansion, there may be ample justification for replacing it if we consider the saving in productivity and the added saving due to increased man-hour efficiency with new equipment. This isn't entirely a maintenance problem, but it does tie in with the utility of accurate records which can be made to show the changing condition of productive equipment by showing the falling off of productivity and increase in rejects. True, the foremen and maintenance men are supposed to watch these things. But they have other things to do, too, whereas a written record doesn't forget.

In considering the desirability of replacing a machine due to its depreciated condition, it is well to note that replacement does not imply total loss of the asset since the machine may be reconditioned and put into service on lighter or less exacting work.

No attempt has been made in this discussion to establish any definite relationship between maintenance charges and need for retirement. Too many variables are involved to make this possible. Frank L. Eidmann in his recent book, "Economic Control of Engineering and Manufacturing," works out a simple mathematical analysis to give the estimated number of years for which the annual charges are a minimum. Naturally this analysis is more or less academic.

Therefore, we may conclude that in the present state of the art it seems very desirable to set up accurate records of machine history particularly with respect to maintenance charges if we are to achieve better control of overhead costs. Moreover, it is only through such records that standardization of maintenance operations may be attained.

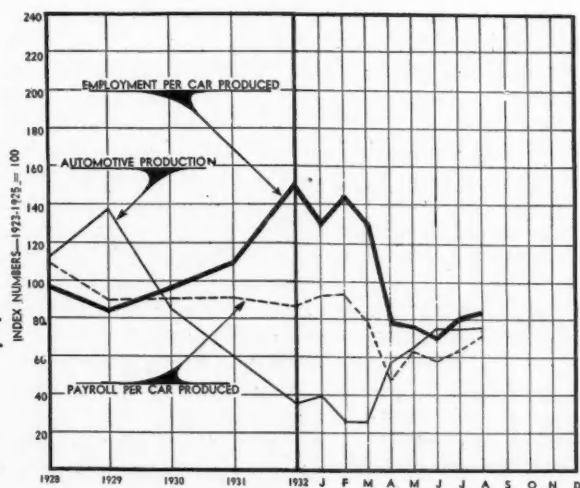
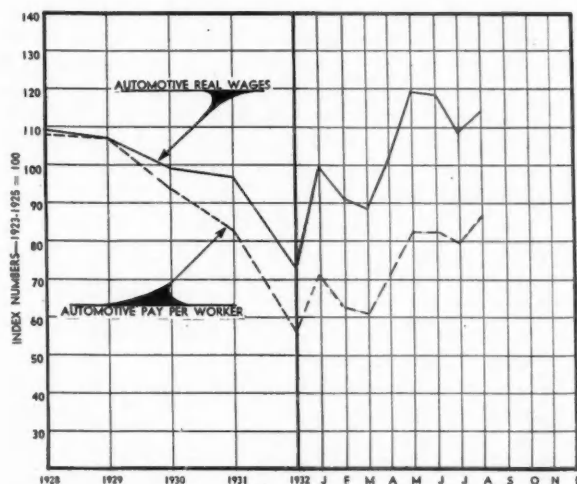
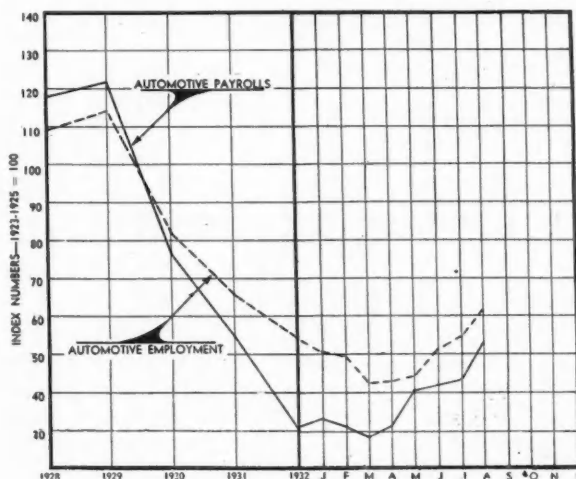
Workers Earn 9% More as Automotive Payrolls Show 14% Gain in August

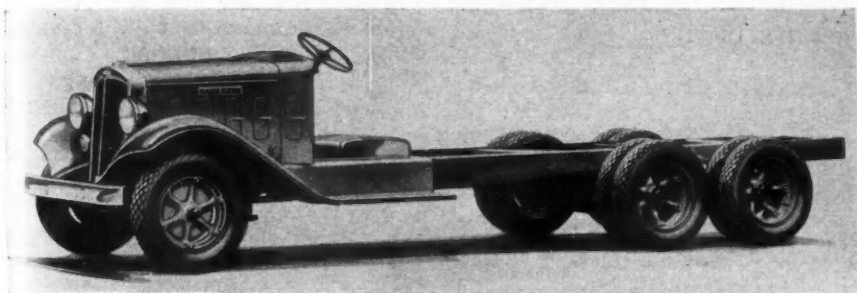
EARNINGS per automotive worker increased nine per cent in August, the index for the month being 86.4 as compared with 79.0 in July. The gain was due primarily to the wage increases effected by the industry on August 1 and secondarily to more nearly full time employment due to slightly larger production.

Real wages (wages after adjustment for living costs) also rose in August, the index for the month being 114.2 of the 1923-1925 average as compared with 106.8 in July. This increase took place despite an increase in the index of the cost of living from 74.0 in July to 75.6 in August.

The larger wage rates also are reflected in the payroll per car produced which increased from 63.1 in July to 71.0 in August, a gain of 12 per cent in labor costs. Employment per car produced increased from 80.0 to 82.0.

The industry's contribution to the movement to increase national purchasing power is measured by the rise in payrolls from 46.1 in July to 52.5 in August, a gain of 14 per cent. During the same period, the number of workers employed increased 4 per cent from 58.4 to 60.9. In August, 1932, automotive payroll and employment indexes stood at 32.7 and 50.8 respectively. August, 1933, payrolls and employment therefore were 61 and 20 per cent respectively larger than last year.





Chassis view of new 3-ton Federal six wheelers showing the deep section fish belly type frame used

Federal Offers New Six-Wheelers With Two or Four Wheel Drive

FOUR new six-wheel models are announced by Federal Motor Truck Company. They are Models 16 and 17, replacing the E-2SWL and E-2DL respectively and Models 36 and 37 replacing the A-600SW and A-600D respectively. The first two are rated at 15,000 lb. gross, an increase of more than 1000 lb., and the latter two at 21,000, also 1000 lb. more than the A-600D.

The 16 and 17 are three-tonners, differing from each other mainly in that the 16 has an idler axle as the forward unit of the six-wheel assembly, while the 17 has two bevel gear driving axles in tandem. The forward axle of the 36 is also an idler type with bevel gear tandem axles for the 37. Both the latter are nominal $4\frac{1}{2}$ tonners.

Comparing the 16 and 17 chassis with their predecessors, there are to be noted particularly new frames and new and larger engines. The latter are Hercules JXB sixes as used on the latest Federal two-tonner, on which these two six-wheel designs are based. The new engines represent an increase from 137 to 164 lb. ft. of maximum torque.

Clutches, of the single plate type, are larger than formerly, with a nominal size of 11 in., to take care of the increased torque capacity. Spicer cageless roller bearing universal joints are now used both front and rear. Transmissions and axles show little change, but cast iron brake drums are now applied all around on these six-wheelers.

Frames are of the deep-section fish-belly type recently developed

by Federal for its standard 4-wheel trucks. They have a maximum side-channel depth of $8\frac{1}{2}$ in., flange widths of $2\frac{7}{8}$ in. and are made up of $\frac{1}{4}$ in. stock. Gas tanks are larger than formerly, with 21-gallon capacity as against 15 on the previous three-ton six wheelers.

Front springs are now shackled at the front end in rubber bushings, and while of the same length, have been widened $\frac{1}{4}$ in. for a leaf width of $2\frac{1}{2}$ in. Rear springs are unchanged. Carburetor and electrical equipment are interchangeable with the units on the Federal Model 20 standard four-wheel 2-tonner.

The larger engine has required an increase in hood length. Wheelbases are designed for much larger bodies than previously permitted on the three-ton six wheelers, the wheelbases offered being 172, 185, and 198 in. respectively, permitting use of body lengths up to 16 ft. Chassis weights obviously are

somewhat higher than formerly, the difference being in the neighborhood of 400 lb.

Prices are also somewhat higher, the standard model 16 chassis listing at \$1320 and the standard 17 at \$1570. Engine heat indicator and cigar lighter are included in the standard equipment.

There has been a considerable stepping up in wheelbase lengths and an increase in power also in Models 36 and 37, which list at \$2795 and \$3175 respectively. The wheelbases are 192, 205 and 218 in. for body lengths of from 14 to 18 ft. Chassis weight is increased by roughly 450 lb., while piston displacement has been increased to 381 cu. in. The Waukesha 6MK engines used in these chassis do not show an increase in maximum power and torque specifications, but the torque curve is flatter and the maximum is reached at 800 instead of 1000 rpm. The engines

The $4\frac{1}{2}$ ton six wheelers now have the same front treatment as other recent new models in the Federal line



and accessories are identical with those used in the Federal 40 models which are rated at $3\frac{1}{2}$ to 4 tons for the four-wheel design.

The 36 and 37 carry a five-speed transmission with quiet fourth as on the Series 40 four-wheeler. As on the smaller new six-wheelers, universal joints are now of the cageless-roller-bearing type. Steering effort required has been reduced by increasing the size

of the steering wheel to 20 in. and changing the ratio from 21 to 23 to one.

Fish belly frames, adopted on these models also have a maximum frame depth of 10 in. with flange widths of $3\frac{1}{2}$ in. and stock $\frac{1}{4}$ in. thick. Front spring lengths have been increased to 42 in. The front-axle tread is 69 in. against 64 in. formerly. Tru-Stop emergency brakes, 12 in. in diameter, have

been adopted for emergency braking. Gas tank capacity is increased from 19 to 25 gal. and, as on the smaller models, filler openings are now located outside the cab for accessibility.

On the 36 and 37 the same characteristic front end has been adopted as on other recent new Federal models, radiator, fenders, etc., corresponding closely to the Series 40 four-wheeler.

Spray Characteristics with Pintle Type Injection Investigated by N.A.C.A.

DURING the past year so-called pintle-type injection nozzles have come into increasing use in high-speed Diesel engines. In these nozzles the fuel is forced through an annular space rather than through a round hole. The characteristics of sprays from such nozzles have been investigated by the National Advisory Committee for Aeronautics and the findings are reported in Technical Note No. 465 of the N. A. C. A. "Some Characteristics of Sprays Obtained from Pintle-Type Injection Nozzles," by E. T. Marsh and C. D. Walron.

A sectional view of the nozzle with 30 deg pintle and a pintle diameter of 0.059 in. is shown herewith. Fuel was injected in a glass-windowed pressure chamber and the spray was photographed by means of the N. A. C. A. spray-photograph apparatus. The N. A. C. A. has previously obtained much information regarding the characteristics of sprays from nozzles having plain round-hole orifices, and this research was undertaken to make the available information on spray characteristics as complete as possible.

Photographic records of the sprays were made for two different pintle nozzles and two different injection pressures, 1500 and 4000 lb. per sq. in. Valve-opening pressures were varied between 600 and 3600 lb. per sq. in., and injection took place into air at 11 to 18 atmospheres density and at room pressure. The penetration of sprays is dependent upon the density and not the pressure of the air in the re-

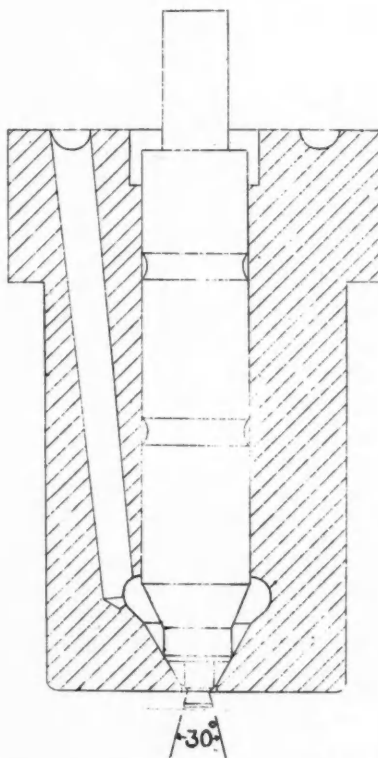
ceiver, and since the air in the receiver is at atmospheric temperature, pressures of from 11 to 18 atmospheres give air densities substantially equal to those obtained in engines in normal operation when using compression ratios of from 11 to 18.

The following conclusions are drawn from the results:

1. The cone angles of sprays from nozzles having pintle angles of 8 deg. and 30 deg. are different during the early part of their injection periods, but are approximately the same during the later stages, and are approximately the same as the cone angle of sprays from plain round-hole orifices.

2. The penetration per unit of time of sprays from the 8-deg. pintle nozzle is slightly higher than that of the sprays from the 30-deg. pintle nozzle, and is about the same as that of sprays from plain round-hole nozzles.

3. Increasing chamber density decreases the penetration of sprays from pintle nozzles in about the same ratio for both high and low injection pressures.



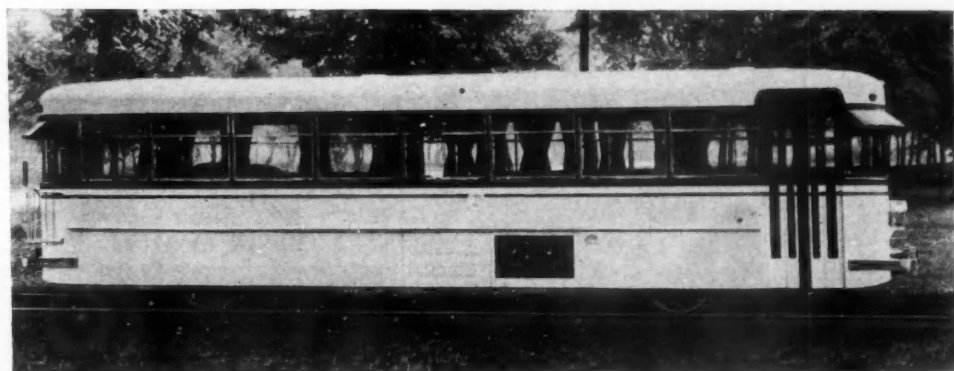
Section of pintle nozzle tested (0.059 in. pintle diameter, 30-deg. pintle angle)

How It's Done

The A.S.T.M. Manual on Presentation of Data, just off the press, was prepared by a special committee of engineers, who are at the same time statistical experts, to correlate and make available in convenient form some of the principles of efficient presentation of data. The Manual discusses the application of statistical methods to the problems of (1) condensing information contained in a set of observations and (2) presenting the essential information in a concise form more readily interpretable than the unorganized mass of original data. The Manual comprises 45 pages. Price 50 cents the copy.

New Two-Engined FWD Railbus Has Independent Drive for Each Axle

F.W.D. four-wheel drive,
dual - powerplant railbus



A RAILBUS propelled by two power plants, each driving one of the two axles through its own three-speed transmission, has been built by the Four-Wheel Drive Auto Company of Clintonville, Wis. This is not the first venture of the company in the railcar field, as it has built numerous light railcars in the past and also has had considerable experience in the conversion of regular highway buses for service on rails.

The new rail bus is 30 ft. long, 7 ft. 7 in. wide, and accommodates 35 passengers. Equipped with two 86-hp. engines it is said to be capable of maintaining speeds of more than 70 m.p.h.

The present design differs from former four-wheel-drive power applications in that each axle is driven by a separate engine through a separate three-speed transmission. Controls for the two

drives are actuated by a single set of levers in the driver's compartment. Should one powerplant be disabled by accident, the corresponding transmission can be shifted into neutral and the bus temporarily operated on the remaining powerplant with two-wheel drive.

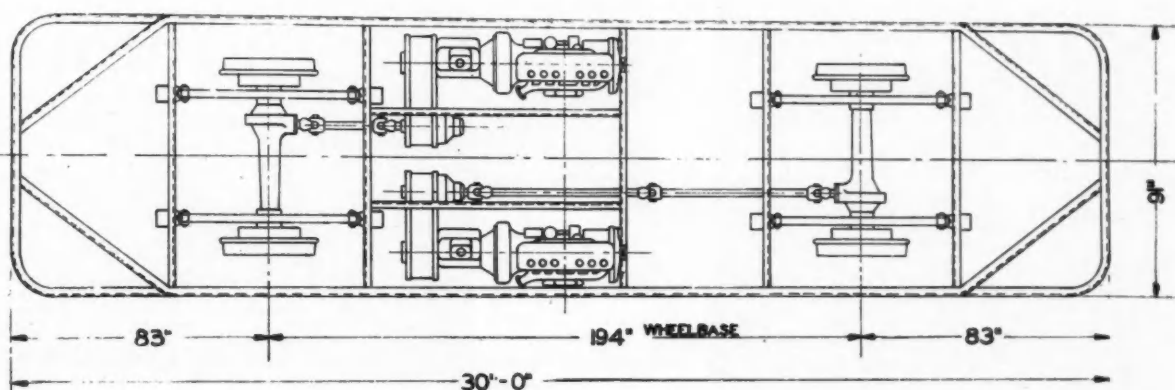
Another feature of the design is the reversing gear, which enables the car to be driven in reverse through each of the three speeds in the transmission, so that it can be operated in either direction with equal facility. Axles are of the full-floating, heavy-duty type and are equipped with conventional automotive-type differentials. While the use of differentials is a departure from ordinary railroad practice, it has been found that they are valuable in tending to prevent wheel climbing and in adding to the flexibility of the transmission system.

Four-wheel drive is claimed to possess advantages in rail buses with respect to both economy and safety. By applying driving torque to all four wheels, slipping of the wheels under high accelerating torques is minimized, and the maintenance cost is said to be reduced because stresses on the driving members are lowered.

Wheels are of the rubber-insert type, a thick layer of rubber being vulcanized inside the MCB regulation steel tires. The steel tire with rubber cushion is pressed onto the steel wheel.

Body equipment for the bus is varied to suit the customer's requirements, and instead of the 35-passenger day coach a 16-berth sleeper can be supplied.

Chassis lay-out of railbus
made by the Four-Wheel
Drive Auto Co.



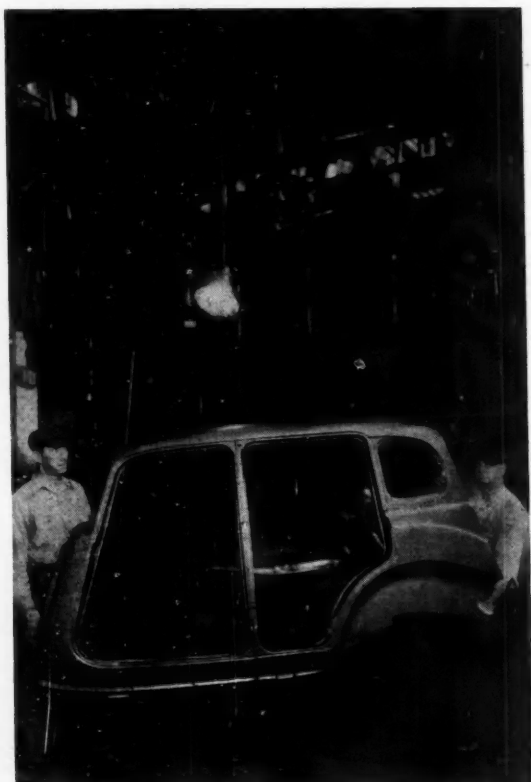


Fig. 1—One-piece sedan side panel taking in entire body side from hood ledge to the tail of the back panel

Fig. 2—Interior view of the side panel showing the reinforcement around window and door openings, closure of the B & C pillar and brackets at the roof rail



SUPERB lines and a new order of riding comfort attributed to the all-steel body construction adopted by Studebaker are but the outward evidence of "hidden" qualities which reflect unique engineering and manufacturing features of the bodies for the 1934 Studebaker line.

Briefly these features are:

1. All-steel body construction molded to advanced lines approaching the lines of the custom - built streamlined job which attracted so much attention at the last Auto Show.
2. All-steel bodies for the entire line, an achievement made practical and economical only through an interchangeable die program sponsored by Studebaker; also through the use of interchangeable body parts.
3. One-piece stampings for major units resulting in the minimum number of parts.
4. Maximum rigidity due not

only to the massive body construction but also to the stiffness imparted to the whole

car by the use of a sill-less body directly to the side rails. Perhaps one of the most inter-

Fig. 3—Standard sedan back panel



New Studebakers A

by Joseph Geschelin

Engineering Editor,
Automotive Industries

All Have All-Steel Bodies

This achievement has been made both practical and economical by the use of interchangeable dies

esting details out of the host of features which might appeal to the engineer, is the balloon type cowl. It has a maximum depth of 22 inches. It seats the passenger and pilot around the engine, on the one hand; it imparts great rigidity to the front end, as another function. Still another virtue of this construction is that the panel is inherently rigid and thus is free of any tendency to rattle or vibrate.

Body making craft in the way of design and die construction takes a hitherto uncharted course beyond the orthodox conception of metal stretching. The side panel is perhaps the largest one-piece body stamping that has been attempted. In fact, it taxes the bed capacity of

the largest presses used by the E. G. Budd Mfg. Co., and requires the welding-on of a small tailpiece at the tip end of the wheel house.

Following the body stampings in their course through the production lines at the Budd plant, we were particularly impressed by certain unusual points such as, deep sections involving metal stretching of a higher order; sharply defined lines around the windows, pillars, and belt; also the seeming lack of concern regarding abrupt changes in surface molding which might be typified by the construction through the rear quarter of the side panel. Slender but very deep pillars add much to torsional stiffness and the rigidity of the door mounting.

It is an impressive fact that although the pillar is only $1\frac{3}{8}$ in. wide, it is pierced accurately through the narrow face for the door mounting hardware. Another interesting detail bearing on the economy of the construction is the nice touch of punching a piece out of the inner door panel to serve as a glass stop. This eliminates an extra stamping and simplifies assembly.

Despite the outstanding character of the die program, die construction is simple if not entirely conventional and does not employ trick features or intricate mechanism that might go haywire. Die design is so worked out as to minimize the need for metal finishing. This is accomplished by making deeper blanks which leave the wrinkles and draw lines in the scrap.

Door panels are insulated against drumming and vibration by special felt pads cemented on in accord-

Fig. 4—Balloon type cowl shown in welding machine where reinforcements are assembled



Fig. 5—Interior view of cowl giving the detail of the reinforcements



ance with the procedure adopted by Budd sometime ago and described in *Automotive Industries*.

Coming to the details of the body parts being built for Studebaker by the E. G. Budd Mfg. Co., we find the outside and inside views of the side panel in Fig. 1 and Fig. 2 respectively. The sedan side panel is made in one piece extending the entire length of the body from the hood ledge to the tail of the back panel. As an example of the depth of draw, the B & C pillar is a box section $3\frac{1}{2}$ in. deep, while the wheel house is $6\frac{1}{2}$ in. below the face of the side panel.

Fig. 2 shows the sharp, distinct parting lines as well as the reenforcement around window and door openings and the roof.

The back panel, Fig. 3, is drawn in one piece with the characteristic double curvature in profile. But in addition, it has a sharp turn-under $4\frac{1}{2}$ in. in radius at the tail end. The maximum depth in this panel occurs about the window section and amounts to 9 in.

On custom jobs the panel besides going through the regular drawing operations which produce the

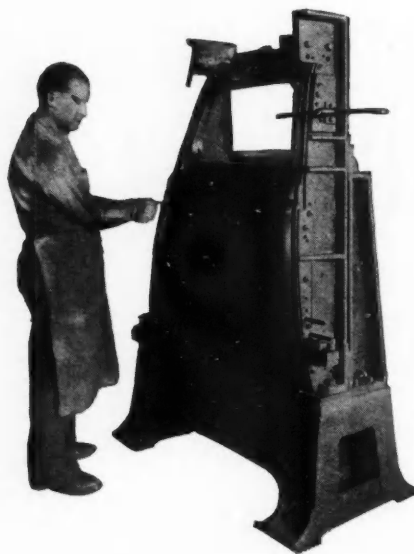


Fig. 6—Finished door being inspected in the master framing fixture

standard part, is also pierced to take the integral trunk.

The balloon cowl mentioned earlier is certainly a unique development in body construction. What a far cry from this design to the old straight panel fire wall which served simply to separate the en-

gine compartment from the body. The new cowl is shown in Fig. 4 as it is being lifted out of the welding fixture where the various reinforcements are assembled.

An interior view of the cowl in Fig. 5, gives a better picture of the nature of the reinforcements and their function. Note the heavy construction at the lower ends for fastening to the body and rails.

The general emphasis upon accuracy may be noted in the final inspection of doors in the massive metal framing fixture shown in Fig. 6. The inspector checks for the quality of the fit in general and gages accurately the clearance all around. Clamps at the top and bottom of the fixture are arranged to permit the door to swing in the same fashion as if hinged on the finished body. After inspection repairs are made, if necessary, to assure an acceptable fit at the final assembly.

Finished stampings are shipped to the Studebaker plant at South Bend. The parts are flash-welded to form the integral unit and then proceed through the body lines for finishing, painting and trimming.

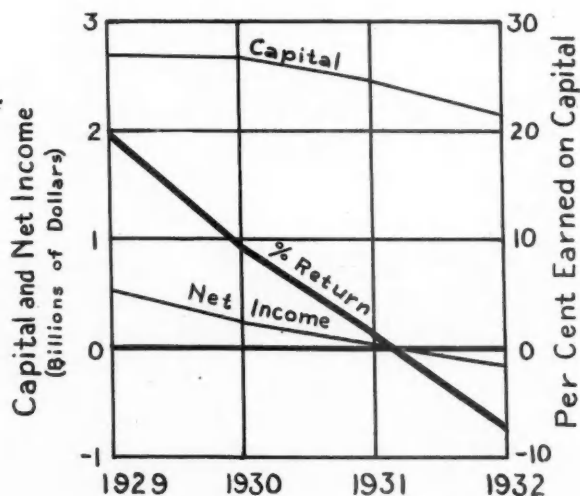
Returns on Automotive Capital

(13 Car Makers, including Ford, and 33 Parts Companies)

Year	Capital*	Net Income†	Per Cent Return on Capital
1929	\$2,688,000,000	\$536,000,000	19.9%
1930	2,656,000,000	252,000,000	9.5
1931	2,465,000,000	39,000,000	1.6
1932	2,142,000,000	—149,000,000d	—7.0d

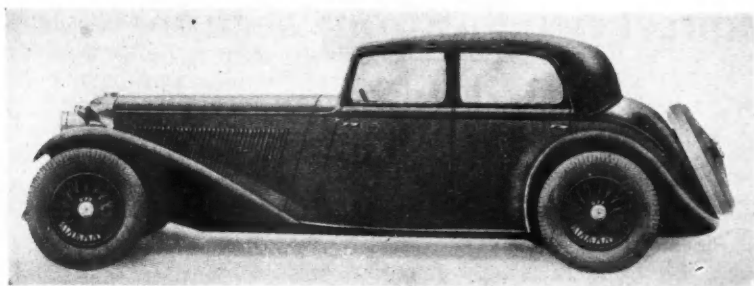
* Capital stock and surplus. Funded debt not included.

† Indicated Ford net income included in above totals is after any dividends which may have been paid. In all other cases, the actual net income, that is before dividends, was employed.



Bentley Car Revived in England

A 3½ Litre Speed Model Designed and Produced by Rolls Royce



New Bentley built by Rolls Royce in England. With this four-door sports sedan body the price is £1460

by M. W. Bourdon

British Correspondent,
Automotive Industries

THE new Bentley car that has been in preparation since Rolls Royce Ltd. acquired the interests of the original Bentley concern eighteen months ago will shortly be announced in England, and I am allowed to send *Automotive Industries* in advance an outline of its specification and characteristics.

It is to be known as the Bentley 3½ Litre, not the "Rolls-Bentley" as has been surmised by reason of the fact that it has been designed and will be produced in the Rolls Royce plant. It is essentially a speed model of the highest grade with a maximum speed of around 100 m.p.h., but, owing to its tractability may be comfortably driven in traffic.

The engine is a 3669 c.c. six-cylinder, with a bore and stroke of 3¼ x 4½ in. and develops over 120 b.h.p. at the peak of its power curve. There are only the usual two valves per cylinder, located in a cast-iron cylinder head and operated by pushrods.

Two interconnected S.U. expanding type carburetors with electric pump feed are used, and, apart from the engine suspension and a

special form of combustion chamber of which particulars are withheld, there is nothing unorthodox in the fundamentals of design. Engine suspension is by means of a pivoted mounting with rubber supports provided with dampers to prevent excessive movement relative to the chassis. The four-speed gear set is of the synchromesh type, with the synchronising clutches affecting third and high gear engagement and with silent gears for all except the lowest ratio. The final drive is by spiral bevel gears.

The springing also is orthodox with long semi-elliptics, while the brake equipment follows Rolls Royce practice in having a mechanical servo. The latter takes the form of a friction disc driven from the gear-set; pedal pressure applies the rear brakes directly and applies a servo brake to the friction disc, which in turn operates the front brakes and supplements pedal pressure in applying the rear ones. The hand lever actuates a separate set of shoes in the rear wheel drums. Chassis lubrication is centralized, a foot-operated pump delivering oil to all details including

the plates of the semi-elliptic springs.

With a wheelbase of 126 in. and 56 in. track the chassis is low built and is intended for more or less streamlined bodywork, open and closed. As may be surmised, it is not a low-priced car; the chassis price, £1,100, is £50 more than that of the 25 h.p. 3½ litre Rolls Royce, the engine of which has the same bore and stroke. With an open sports type four-seated phaeton body the price is £1,380, while with a two-door four-passenger sports sedan with a long-skirted tail it is £1,635.

Czech Shoe Manufacturer Will Produce a Small Car

A LARGE shoe-manufacturing concern in Czechoslovakia, Bata S.A., which already is engaged in the manufacture of pneumatic tires, is reported to be about to enter upon the manufacture of small cars. The design, it is stated, has been completed and production will begin as soon as the head of the concern, J. Bata, returns from a trip to the United States. The Janecek Small Arms Works, another Czechoslovakian concern with headquarters at Prague, also is planning to enter the automobile field with a small car with front drive.

Dividends, Employment, Wages

The workers and not the stockholders are the ones who have drawn the more direct benefits from accumulated reserves

"It is my personal opinion that the wage earner has the same right of security of employment that the stockholder has to dividend payments," Edward F. McGrady, Assistant Secretary of Labor and also Associate Recovery Administrator, is reported to have said last week in a speech before the Labor Trades Department of the American Federation of Labor.

Just to see how the automotive industry has stacked up on the relationship of dividends to employment and wages, *Automotive Industries* compiled common and preferred dividend payments in the last four years to stockholders of 12 car and 33 parts companies. While the results provide a rather comprehensive picture, it is not entirely satisfactory for comparative purposes inasmuch as it was impos-

sible to include dividend payments by the Ford Motor Co., due to lack of available data. Obviously so large a factor in the industry might have a material influence on the totals.

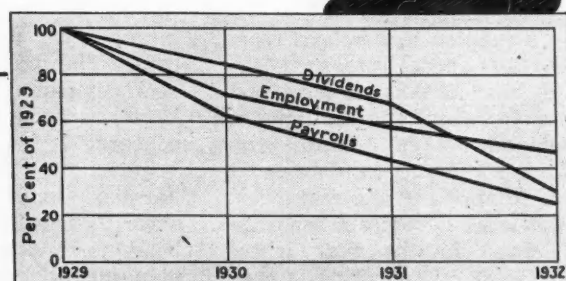
The dividend data together with the government indexes of automotive employment and payrolls are given in the accompanying table and chart. In view of the fact that, in general, there was probably no conscious effort to maintain 1929 relationships, the correlation among the three series is rather close.

The chart and table show the relationship of dividends, employment and wages for the 45 companies considered from 1929 to 1932, inclusive. With an increasing number of these companies dropping off

the dividend paying list during this period, we find, in 1933, that 28 of the 45, or 62.2 per cent are not now paying dividends to stockholders but are continuing employment and the payment of wages.

"Just as reserves are accumulated to secure dividends to stockholders, there should also be guarantees that part of these reserves be set aside to protect workers if slack time does come in any industry," Mr. McGrady continued.

Hardly anyone who is thinking in tune with the times will want to quarrel with Mr. McGrady regarding the soundness of the conclusion which he expressed in the above paragraph. But why is it that a government official will permit himself to formulate and give voice to such a carelessly phrased premise? Are industrial reserves set up simply to pay dividends or are they set up to provide a backlog for operations during periods of poor



Comparison of automotive dividends, employment and payrolls, 1929 = 100

In the Automotive Industry

Automotive Dividends vs. Automotive Employment and Wages

Common and Preferred* Dividends

business? Can stockholders get dividends in nine hundred and ninety-nine out of a thousand cases unless men are employed and wages paid first? Isn't there just a trace of something in Mr. McGrady's first statement which is likely to strengthen prejudices and spread misunderstanding?

In the same speech from which the previous quotations were taken, Mr. McGrady also said, "We propose to see that industries share the responsibility for regular employment and a decent annual income for their employees. This can be done by a rearrangement of their selling program and scientific planning in advance."

For those social and economic objectives, Mr. McGrady will find plenty of sympathy among industrialists.

The automotive industry in particular will welcome any practical program for smoothing its jagged production and sales curves, not only because of the social consequences of seasonal and cyclical irregularities, but also because of their obvious effects on production costs. For both of these reasons, the industry in the past has given the problem uninterrupted study and is continuing to do so.

While scientific planning might minimize cyclical fluctuations, it is not at all certain that it would have much influence on the rather violent seasonal variations to which car sales are subject even if, in addition, there was a rearrangement of selling programs. Cars have to be sold when the public wants them and at prices the public will pay for them. Through the years, the public has shown a pronounced tendency to concentrate its automobile buying between March 1, and August 31—about 65 per cent of

Year	Amount	Index	Employment	Wages
1929	\$298,000,000	100	100	100
1930	251,000,000	85	72	63
1931	203,000,000	68	58	44
1932	90,000,000	30	47	25

*Ford dividends, if any, not available. Totals include 12 car makers and 33 parts companies. Employment and wage data are Federal Reserve Board indexes adjusted to 1929 = 100.

Companies included in dividend tabulation are Auburn, Chrysler, General Motors, Graham, Hudson, Hupp, Mack, Nash, Packard, Reo, Studebaker, White, American Chain, Bendix, Bohn, Borg-Warner,

Briggs, Budd Mfg., Budd Wheel, Continental, Campbell, Wyant & Cannon, Eaton, AutoLite, Exide, Hayes Body, Houdaille, Kelsey-Hayes, Lycoming, Marlin-Rockwell, Midland, Motor Products, Motor Wheel, McCord, Mullins, Murray, Raybestos, Reynolds, Ross, Spicer, Stewart-Warner, Thompson, Timken Axle, Timken Roller Bearing, Trico and L. W. Young.

the year's business being done during this six-month period on the average. Consequently, any program to regularize automotive production would have to include a plan for getting the public to give up their present unsocial and uneconomic buying habits.

To one not familiar with automotive production and marketing, off-peak production and storage of cars in finished or semi-finished cars might seem to offer a simple solution. In actual practice, however, it doesn't work out so simply, primarily because of the difficulties encountered in forecasting not only the total number of cars which the market will absorb, but also the body types, color and equipment the public will want in different parts of the country. In addition, there is the effect of storage costs on selling prices to be considered, although this expense might be offset in part or entirely by economies

incident to regularization of production, if the forecasting problem could be solved satisfactorily.

Despite these difficulties, the industry does not regard the problem as necessarily unsolvable simply because so far it has been unable to find the answer, nor has it given up its efforts to find a solution. If it can be solved by rearrangement of selling programs and scientific planning, as Mr. McGrady indicates, certainly no one will be more grateful for the Government's assistance than the automotive industry.—D. B.

Heat and Corrosion Resistant C

THE application of Ni-Resist (1) cast iron in the automotive industry is now well established in a variety of uses. Many of these applications are based on its resistance to oxidation and corrosion such as its use for heat control valves, valve guides and exhaust manifolds on heavy duty motors where its resistance to oxidation and growth is paramount. Other applications are based on its high coefficient of expansion being approximately the same as some of the aluminum alloys. Thus its use for cylinder liners in aluminum cylinders, particularly for air cooled cylinders of both engines and light weight air compressors. While this combination in engines has not reached a production stage, it has been used to a sufficient extent to show that it is sound engineering and offers many advantages such as excellent cooling in the cylinder walls, good wearing properties, and

(1) An austenitic cast iron containing approximately 14% nickel, 6% copper, 2% chromium.

permits the use of a solid skirt type aluminum alloy piston which can be fitted with close clearance.

A further application—one which is based on its high coefficient of expansion combined with its resistance to oxidation—is that of a valve seat insert for use in aluminum heads. This has been used in a well-known air cooled motor for over two years with complete success. It is installed with a shrink fit and a slight peening down of the aluminum around the edge. One car so fitted was recently checked after running nearly 40,000 miles without grinding of the valves. The valves and seats were in excellent condition and all of the inserts were tight with no sign of loosening. There are several points in this connection that will be discussed later.

A further review of the use of Ni-Resist in the automotive industry covers its use as a piston ring land (2) to reduce wear. Ni-Resist

(2) *Automotive Industries*, May, 1933, p. 578.

retains its hardness and resistance to wear at elevated temperatures and again its coefficient of expansion is sufficiently close to aluminum piston alloy to permit its successful use as an insert when cast in place.

The wear test conducted by the British Institute of Automobile Engineers (3) showed that wear was very rapid under starting conditions and cold engine operation when the cylinder walls were sufficiently cold to cause condensation of the combustion products, thereby causing rapid rusting. Tests were run with piston rings of austenitic cast iron of the Ni-Resist composition; the results are summarized in the following table taken from that publication:—

	Ordinary C.I. Piston Rings	Aus- tenitic C.I. Piston Rings
Top ring wear, inch per 1000 miles	0.00144	0.00068
Cylinder wear, inch per 1000 miles	0.00506	0.00116
Total cylinder wear, gms. per 1000 miles	0.56	0.318
Cylinder wall temperature	50 deg. Cent.	
Speed	1600 r.p.m.	
Load	59 lb/in ² b.m.e.p.	

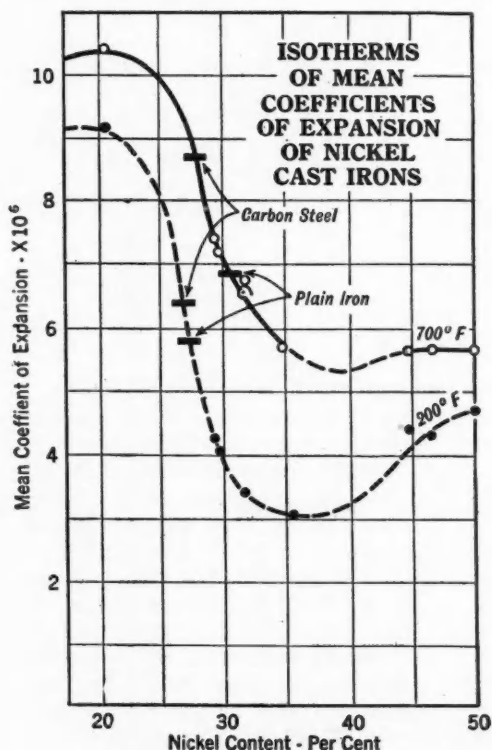
"It will be observed that the top piston ring wear was reduced in the ratio of 2:1:1 and that there was also a very substantial reduction in cylinder wear."

Other applications based on its corrosion resistance are water pump bodies and impellers for marine engines operating in salt water. In fact, one of the Government bureaus has encountered so much trouble with engine corrosion from sea water cooling that they are seriously considering the use of Ni-Resist cylinder blocks.

Ni-Resist with its high coefficient of expansion has proven so useful it was decided to investigate the possibilities of producing an iron with similar resistance to heat and corrosion but with a lower coefficient of expansion.

The effect of nickel on the coefficient of expansion of austenitic irons is illustrated in the accompanying chart. At between 20 and 22 per cent of nickel the iron reaches a maximum coefficient of expansion, while further additions of this element gradually lower the expansion

(3) *The Engineer*, June 23, 1933, pp. 634-636, also June 30, 1933, pp. 660-662.



Choice of an iron of the proper coefficient of expansion for use as an insert determines its useful life and satisfactory operation. This chart facilitates comparison of this criterion in various types of irons

by Thomas H. Wickenden*

Cast Irons

Having a Wide Range of Expansion Properties

to reach a minimum at 34 to 35 per cent, while still further additions result in a gradual increase. Thus, by selecting the proper nickel content, an iron can be made with a coefficient of expansion from a minimum of near 0.000003 per deg. Fahr. in an iron containing around 35 per cent of nickel to the same as plain iron 0.000006 per deg. Fahr. with 28 per cent of nickel to over 0.000009 deg. Fahr. for 20 per cent of nickel iron and over 0.000010 per deg. Fahr. for Ni-Resist containing 14 per cent of nickel and 6 per cent of copper. However, copper additions to higher nickel iron make practically no change in the expansion properties.

The choice of an iron of the proper coefficient of expansion for use as inserts in cast iron, steel, brass, aluminum is of vital importance to insure proper life and operation. Much trouble has been experienced from using inserts having improper coefficients of expansion under conditions of widely varying temperatures. If an insert is used with a considerably lower coefficient of expansion than the base material, it will become loose at elevated temperatures, will be difficult to retain in place and give improper heat transfer. If a metal with too high a coefficient of expansion is used, it will expand more rapidly than the base metal under heat and the pressure exerted may break the base material or upset the insert so that it will be loose when returned to normal temperatures.

In many installations there is often a steep temperature gradient from the insert to the base material, a valve seat insert in an internal combustion engine is an excellent example. The higher operating temperature of the insert may further aggravate the tendency to upset. A satisfactory metal for this job is one having the proper resistance to these destructive forces as

well as a coefficient of expansion equal to or slightly under that of the base metal. An insert of this kind can be installed by means of a shrink or light press fit and will remain tight indefinitely. In the accompanying chart are indicated the coefficients of expansion of plain iron and carbon steel at 200 and 700 deg. Fahr. It will be seen that an iron with a nickel content in the range of 28 to 30 per cent provides an ideal coefficient of expansion for use in combination either with a carbon steel or plain iron base. With 4 per cent of chromium this iron will have a hardness around 140 to 160 Brinell and will be machinable without difficulty. By increasing the chromium content to 5 per cent the hardness will be raised about 20 points Brinell and machining will become somewhat more difficult. When used for cylinder liners, a chromium range of 4 to 5 per cent is recommended, while for valve seat inserts where higher hardness is desirable and slower machining speed is not objectionable, a range of 5 to 6 per cent chromium may be employed.

This material has been under development for several years and now has sufficient background to prove its usefulness as a valve seat

insert material in cast iron cylinders or heads. This recommended use to automotive engineers has invariably brought the response that it was too soft, having in mind some of the hard materials in use today. However, engine tests have shown that it maintained its seat as well as the hard material. For long time data (consider) the success of its sister material—Ni-Resist—having a hardness around 150 Brinell and not requiring regrinding after 40,000 miles. This certainly indicates that extremely high hardness is not essential if the material has proper resistance to corrosion and oxidation.

This austenitic iron offers many manufacturing advantages to the manufacturer of valve seat inserts. It can be centrifugally cast in cylinders of several feet in length with nominal finish allowance on the two diameters, this making for a very small wastage of material. These cylinders can be machined in semi-automatic machines producing a finished ring insert. This compares with individual casting and finishing by grinding of the hard materials.

*Assistant Manager, Development & Research Dept., The International Nickel Co., Inc.

Electrochemistry on the Increase

Industrial Bulletin for September quotes Colin G. Fink, authority on electrochemistry, as visioning the phenomenal growth of this new industrial tool. Figures show that world consumption of electrochemical power rose in recent years from a high of 10 billion kw. hrs. in 1919 to 21 billion in 1929. For the practical explanation of this increase we are referred to the jumps in power consumption by the electroplating industry, a thousandfold in the past decade. This

increase is due in large measure to the introduction of chromium plating, but appreciable quantities of electricity are now also consumed in the electrolytic cleaning of articles before plating. A recent large-scale process cleans, plates, and anneals, all by electricity. Another great impetus to electroplating will occur when developments now under way, on non-aqueous electrolytes, will permit commercially successful plating of metals such as aluminum.

Parts Industry Fights for Forty Hour Maximum Week

(Continued from page 414)

in a short time it gets into its greatest productive period."

Turning to the effects of seasonal fluctuations, Mr. Carlton introduced data showing that they were at least as severe in the parts industry as in the vehicle business and, of course, were more severe for the individual manufacturer than for the industry as a whole. Discussing the relation between such fluctuations and the maximum hour limitation, Mr. Carlton said "... there is a limit beyond which it is inadvisable from a social standpoint and inefficient from an operating standpoint to add temporary workmen to the payrolls for short duration during peak periods.

"From the social standpoint, it must be borne in mind that a large proportion of the automotive parts and equipment industry is located in communities affording relatively few opportunities for employment other than those provided by this industry and by business primarily dependent upon it. . . . If the maximum hours which an employee may work in any one week are fixed no higher than the average number of hours per week, which it is desired to realize during the year, then the number of temporary workers, who could be given employment for only a small part of the year, must be greatly increased. This results in large bodies of floating employees becoming public charges during a considerable portion of the year."

Some light was provided on what effects the 40-hr. week might have on employment in that parts industry as a result of a study of 49 plants employing about half the workers in the industry. Since July, these plants have been operating on a 40-hr. basis. The results of this study are summarized in the following table:

Month	Number of Employees	Man-Hours	Average Weekly Hours per Employee
May	42,381	9,871,286	53.5
June	47,745	9,662,263	46.7
July	52,661	9,151,686	41.7

These figures show that the 24.3 per cent increase in employment was not due to a rise in available work as the man-hours show a steady decline, but to a shortening of the hours of work. Commenting on the figures, Mr. Carlton said: "It is our firm belief, furthermore, that this showing will be still further improved when we put the 40-hour week into effect throughout the industry."

Discussing the wage provisions, Mr.

Carlton stated that the code "will effect a substantial increase in wages for a very large number of the employees in the industry." To prove this statement, he introduced the following table:

Year	Percentage of Total Factory Workers	
	Receiving less than 40 cents per hour	Receiving less than 30 cents per hour
1928	13.75%	2.62%
1929	13.75	2.64
1930	14.26	2.73
1931	15.92	4.31
1932	19.79	8.95
1933 (6 mos.)	23.11	14.04

To emphasize another difference between the parts and vehicle industries, Mr. Carlton also presented the following table showing that wages standards were substantially lower in the parts industry than in the vehicle manufacturing plants:

Year	Average Hourly Wages	
	Vehicle Industry	Parts Industry
1929	\$0.718	\$0.5861
1930 .....	.716	.5773
1931 .....	.684	.5463
1932 .....	.603	.4850
1933 (6 mos.)	.593	.4529

The effects of rising costs incident to the code proposals and their effects on the industry's markets, were stressed by Mr. Carlton, particularly in relation to the possibility of the vehicle manufacturers producing for themselves some of the items they now buy from suppliers. On this phase, Mr. Carlton said:

"Very serious consideration must be given to how far our industry can go in reducing its hours of work and raising the wages of its employees, and as to how serious may be the effect of increases in the cost of its products brought about thereby with the consequent effect upon the ability of the industry to maintain or increase its volume of business.

"The labor costs of our products normally increase with the decline in business volume. This is borne out in the following tabulation taken from a confidential statistical study made by Ernst & Ernst:

Year	Labor Cost Per Cent of Sales
1928	23.37
1929	21.99
1930	21.41
1931	24.46
1932	27.40

"This study indicates that a rise in the proportionate labor cost of the products of this industry took place during the years 1931 and 1932, even though wages rates had been de-

creased during this period.

"Unless and until the volume of business can be increased substantially above the low levels of 1931 and 1932, our industry must consider very carefully any further additions to the costs of its products by way of shorter hours of work and increased rates of wages.

"This is particularly important to the so-called original equipment division of our industry whose products are sold to automobile manufacturers. Unless costs can be kept within reasonable limits, the automobile manufacturers may take over the manufacturing of parts and equipment which they would otherwise purchase from members of our industry."

The spirited defense of the merit clause indicates that the Recovery Administration has another fight on its hands regarding this much-argued language. Mr. Carlton said the code picture "is not complete without a clear portrayal also of the rights of the employer which are guaranteed by law and which were not repealed by the Recovery Act.

"While these rights were not expressly set forth nor even mentioned in the wording of the Act, nevertheless they remain a part of the law of this land and under the law the employer has every right to select, retain and advance his employees on the basis of individual merit.

"Industrial strife has already resulted from the fact that many workers have seen only that part of the picture in which their rights are printed in vivid language while the other part of the picture has not been evident nor explained to them. Unless the whole picture is fairly presented in the code, it is our belief that disputes, misunderstandings and industrial disturbances may increase.

"In the whole procedure of writing this code the manufacturers in this automotive parts and equipment manufacturing industry, in conjunction with the Administrator, are performing a legislative function expressly conferred upon them by Congress.

"In the exercise of this legislative function the manufacturers are granted certain discretion as to the subject matter to be included in the code. So long as that subject matter does not transgress the limitations imposed by the Act or conflict with provisions of the law, the choice of subject matter to be included in a code should reside with the manufacturer.

"If this Administration refuses to include in the codes of other industries what it has approved in the au-

NRA Consumer Advisors Recommend Inclusion of S.A.E. Standards in A.P.E.M. Code

8—The dimensional standards, quality requirements, and methods of inspection and tests of automotive parts and equipment set forth in the current edition of the Handbook issued by the Society of Automotive Engineers, or subsequent authorized revision thereof, are hereby adopted as part of this Code. The representation of any product of the industry as complying with the said standards or quality requirements when such is not the case, is condemned as unfair competition.

tomobile manufacturers' code, as signed by the President, it is then in the position of having recognized a *special privilege* and is merely making bad feeling and causing industrial strife at a time when the Nation is asked to make sacrifices and pay higher prices for consumer goods.

"Employers in this industry are not opposed to organized labor. This industry has since its beginning been remarkably free from strife between employees and employers. A great majority of our factories are located in small cities and towns where the only labor problem for the past generation has been a shortage of labor during the seasons of peak demand for our products. Relations between workers and employers are generally

the best, both in regard to wages and working conditions. On the other hand, efforts of some labor organizations to secure control of labor have proven the most serious obstacle to the attainment of the objectives of the Recovery Act.

"Nothing will more certainly jeopardize the success of this acknowl-

edged experiment than to create the impression that the Act contemplated disruption of satisfactory existing relations and continuing agitation for the reorganization of employment relations. Nothing can more surely bring disorder and uncertainty into the whole field of industrial production."

Giving Belt 5 Years' Wear in 30 Days



Test machine and section of a Houghton belt at the end of "five years" wear

It is very important to the belting manufacturer to know how the life of his belting compares with that of other types of belting, how much a belt is liable to stretch in its normal lifetime, whether it will be as efficient after several years wear as when new, etc.

A specially developed accelerated endurance testing machine enables The Research Staff of E. F. Houghton & Co. to study all of these fac-

tors. On this machine two belts are operated against one another, running over pulleys of slightly different diameters so that each belt is forced to slip approximately 5 per cent. In addition to this, the belts are operated under a tension of 100 to 125 pounds per inch of width which is about double the normal operating tension for a single-ply belt.

This combination of forced slip

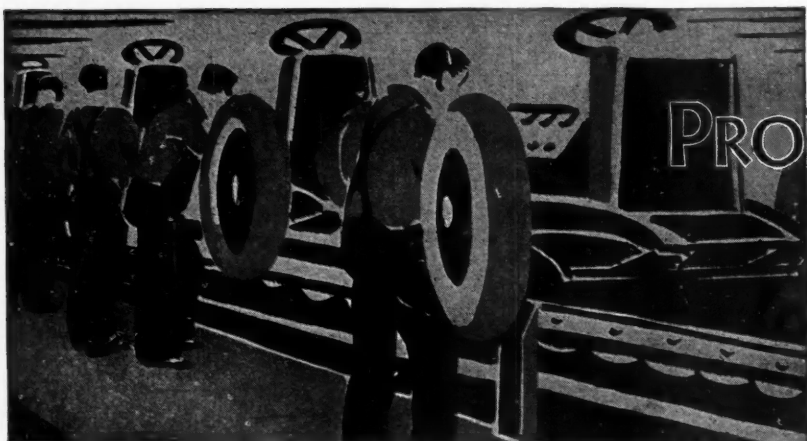
under exceedingly high tension results in one day's operation (24 hours) giving the belt the equivalent of two months of normal wear. This figure has been arrived at by averaging the life of hundreds of belts on this machine with the probable life of the same belts in normal service.

The insert shows the condition of the surface of one of the Houghton ribbed tread belts at the end of a test giving the equivalent of five years of normal service, showing that the surface of the belt is still in excellent condition.

by V. W. Wells

Engineer,

E. F. Houghton & Co., Philadelphia, Pa.



PRODUCTION LINES

By Eye Alone

Bausch & Lomb has done a fine job in bringing together within one set of covers the entire line of optical instruments used in the metal working industry. Optical methods have been gaining in favor for several years, the past few years marking a transition from the laboratory to the production department. Production men, inspectors, and others will find much of interest in this booklet. Be sure to get "Optical Instruments for the Metal Working Industries" for your bookshelf.

Smaller Sizes

Since we have been so actively identified with studies of the economic development of the automotive diesel, we are duty bound to keep the issue brewing. Which leads us to the point that in the last six or eight months we have had a number of inquiries concerning high speed diesel power for vehicles of about two tons rating. In other words the market is by no means limited to engines of large size. Thus far the development in this country has been confined to engines around 100 hp. but we hear that several manufacturers will be out soon with a balanced line. The early bird probably will get the juicy worm.

What's Origin

Who started the term B.T.U.? No one knows, it appears, not even the gas men whose bread is buttered by these same B.T.U.'s. It

was reported at the International Gas Conference that several years search for the answer had met with failure. It is known that the term appeared in a legal document in 1820 but who used it first or how it started still is a mystery.

Time Saving

The American Gas Association is doing some work to see whether it is possible to cut the time of malleableizing iron from the present requirement of about 100 hours. This project is underway at the University of Michigan where scientists already have plumbed the possibility of doing a good laboratory job in 20 to 25 hrs. Although the results are purely experimental, there is now more than a sporting chance that the time cycle will be cut materially, and thus reduce the cost of one of the basic and most widely used products in the automotive industry.

Compensation Costs

Underwriters as well as personnel men are cogitating on the effects of NRA on compensation costs. They wonder whether or not industrial hazards will be increased by "spreading-the-work" over shorter shifts. The big job ahead is to train the newcomers, many of whom haven't worked at machinery for a long, long time, to be careful. Unless the idea is put over quickly and forcibly accidents and compensation costs may get unmanageable.

Every Time

Have you seen the Tinius Olsen exhibit of marvelous, sensitive testing machines and balancing equipment at the Century of Progress? It's well worth seeing. Among other things you will see the first showing of dynamic balancing machines that are destined to do things in the production of clutches, flywheels, crankshafts, etc. Thorsten Olsen told us the other day that his company has been among those present at every International exhibition. Which is some record. Incidentally a complete exhibit of their line is to be shown at the coming National Metals Congress in Detroit.

Wise Buying

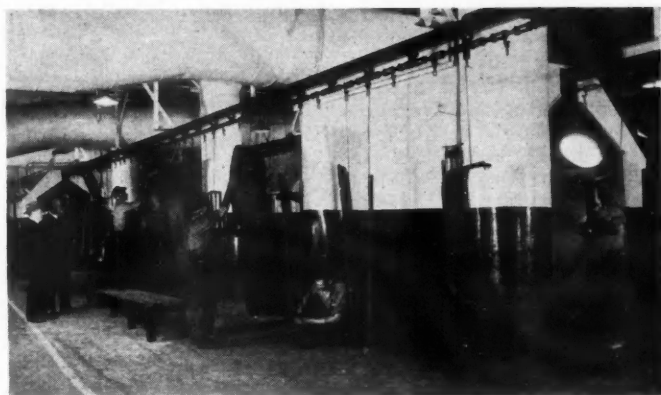
The fact that the volume of new business in machine tools held up in July when others felt a slowing up, is interpreted in some quarters as an indication of better business for the Fall. Certainly modernization in the automotive industry was never more in prospect than it is right now.

Copper Protection

To forestall corrosion in important equipment, the American Blower Corp., reports the use of copper in the air washer system which they make. Tank, casing, and eliminators are of heavy sheet copper. Water lines, headers, and nozzles are of brass. Thus they protect this vital unit.—J.G.

MANUFACTURING
MANAGEMENT
METALLURGY

Cadillac Now Lacquers Rustproofed Sheet Metal Parts in Matched Sets



Sheet metal parts are matched in sets to insure correct color combinations

TO give fenders a finish comparable with that of the body, Cadillac Motor Co. has made two important changes in fender finishing practice. In the first place, they have changed from enamel to Duco Lacquer and the second innovation includes Bonderizing in the finishing line.

In the use of lacquer on all units as standard practice, Cadillac provides color contrasts and color harmony in individualized color schemes. Lacquer is said to provide a more lasting, deeper finish that is more easily repaired if the fender is accidentally injured.

By including Bonderizing in the finishing set-up, the company felt it was providing the most substantial sort of base for the final finish, one that would not only afford a slightly absorbent foothold for the lacquer, but assure a surface that was absolutely free of all oil or grease, as well as the sweat and finger marks that naturally carry over from manufacturing operations.

The production as it is received from the sheet metal plant is run through a Crescent washer, the first section carrying an alkaline solution which is sprayed at a pressure about 32 lb. at 185 deg. F. This is followed by two clear hot water rinses, sprayed at 20 lb. pressure at a temperature of 190 deg. F.

After drying and wiping to re-

move any possible carry-over of foreign matter, the material is hung on racks, carried on an overhead crane-way and immersed in the Bonderizing solution by an electric hoist. The Bonderizing tank is 3600 gallons capacity. The solution is maintained at 210 deg. F. and it requires five minutes for complete chemical reaction.

As the material emerges from the Bonderizing operation, it is given a dipping rinse in hot water and placed in a dryer for 15 minutes at a temperature of 160—170 deg. F.

After another wipe with steel wool and tack rags, the units receive a coat of lacquer primer which is baked for 1½ hours at a temperature of 200 deg. The pieces are then sanded and wiped.

Up to this point, no particular effort has been made to keep complete "sets" of parts together but here they reach a sorting bay where the "sets" are matched up and segregated so the fenders, splashers and all other sheet metal for any particular car will travel together from this point on through the finishing system.

The reason for this is to insure that every unit going on any particular job will have exactly the same hue. And, as further evidence of the careful manufacturing that goes into every car, the same bucket of lacquer follows a set of parts to all five spraying stations in

the finishing line so there is no possibility of a change of hue in any of the five coats of lacquer.

It is believed that this department is one of the most complete of its kind for the Ducoing of all parts apart from the body of the car. Not only are the fenders, splash shield, front and rear bumper supports and other parts finished in Duco, but many parts that are not visible. In all, 38 parts are Bonderized and Ducoed on each car, including various connecting conduits, battery box bracings and other "under-the-hood" parts, or a total of about 400 square feet.

Publications Received

The Thermal Expansion of Refractories to 1800 deg. C., by R. A. Heindl, Research Paper RP. 562 of the Bureau of Standards. Obtainable from the Superintendent of Documents, Washington, D. C. (5 cents.)

Bulletin No. 91 of the National Research Council, giving a list of industrial research laboratories in the United States, including consulting research laboratories, with the fields they cover and their personnel. Published by the National Research Council of the National Academy of Sciences, Washington, D. C. (\$2.00.)

Proceedings of the Nineteenth Annual Road School held at Purdue University, Jan. 23-27, 1933, compiled and edited by B. H. Petty.—Extension Series No. 30 of Engineering Extension Department, Purdue University, Lafayette, Ind.

The Effect of Gasoline Volatility on the Miscibility with Ethyl Alcohol, by Oscar C. Bridgeman and Dale W. Querfeld. Obtainable from the Superintendent of Documents, Washington, D. C. (5 cents.)

Seven Factories Set Deadline Date as Tool and Die Makers Continue Strikes

Workers Want Strikes Settled as a Unit While Producers Hold Out for Individual Negotiation—Rush Tool and Die Requirements Are Being Shipped to Ohio and Other Points

DETROIT—Striking tool and die makers here were warned to return to their jobs by Oct. 6 in a statement signed by Cadillac, Chevrolet, Dodge, Fisher, Hudson, Packard and Plymouth and issued on Oct. 4. Those who do not "will be deemed to have severed all relations with their respective companies."

The statement points out that the manufacturers are operating in good faith under the NRA code and "that there was no known controversy between them and their former employees in tool and die departments in Detroit when the men stopped work."

What the reaction to this announcement will be, of course, cannot be predicted until the deadline is passed but up to press time (Thursday A. M.), efforts to settle the toolmakers' strike in Detroit, Flint and Pontiac were deadlocked by the opposing views of employers and employees. The difficulty in the main, hinged on whether the strike in all three cities should be settled as a unit or whether it should be settled by companies and towns. The strikers insisted on the first, while employers preferred to treat the matter individually.

John F. Carmody of the National Labor Board, sent here by Senator Wagner to attempt to settle the strike, has been confining his activities apparently mainly to attempts to settle strikes at the independent tool and die shops. The latter of course receive their major business from car manufacturers at this time of year when new models are in process of evolution. Since the strike at these shops was called in sympathy with the Flint strikes at Buick, Chevrolet and AC Spark Plug, the Mechanics Educational Society refused to settle until the Flint situation had been cleared up. Flint workers on the other hand were awaiting settlement of the Detroit end before undertaking any activity directed toward ending the strike in their district.

Demands for a 25 per cent increase in wages with a minimum of \$1 per hour apparently were an afterthought on the parts of the M.E.S. in an effort to justify the strike to their own members. Such demands so far have not been presented formally to employers.

Car manufacturers in the meantime have shipped out some of their rush tool and die requirements to independent shops in Ohio, etc. Unless the strike is prolonged over an indefinite period however, it is not believed that it will have a serious influence on automotive production, especially since a considerable number of plants will be shutting down this month for

clean-up of surplus 1933 models.

Ford plants at Chester, Pa., and Edgewater, N. J. continue shut-down, with workers reported to be planning to extend their picketing to other Ford factories. It is also reported that Ford plans to resume 40-hr. operation with occasional shut-downs of a day or two duration to bring the average to the 35-hr. maximum. A United Press dispatch states that Ford is contemplating the restoration of the \$6 a day minimum wage.

Truck Makers Work on Fair Trade Code

DETROIT—A supplementary code of fair competition for heavy duty truck manufacturers is in the process of preparation following a meeting last week of a Truck Trade Practice committee under the auspices of the N.A.C.C. The membership of the committee is made up of A. McKinsty, International Harvester, chairman; A. C. Downey, Dodge Bros.; Martin L. Pulcher, Federal Motor Truck; A. J. Brosseau, Mack; T. R. Dahl, White, and Paul W. Seiler, General Motors Truck.

It was reported that one of the points of differences at the committee meeting is in relation to the handling of used truck allowances for merchandising of used trucks. It is understood that the committee will draw up a purely tentative code of fair competition to be distributed to manufacturing members as the basis for subsequent discussion of the problems involved. Such a code will be in the nature of a supplement to the N.A.C.C. code, which doesn't contain anything with respect to fair trade.

World Motorcycle Output Drops 10 Per Cent

WASHINGTON, D. C.—World production of motorcycles in 1932 totalled 218,075 units compared with 242,977 units in 1931, a decrease of approximately 10 per cent, according to the Automotive-Aeronautics Division.

New Car to Be Built in Lansing Durant Plant?

DETROIT—Rumors circulating here say that the Durant plant in Lansing, recently sold at auction, is being considered by a group of parts makers as a site for the manufacture of a new automobile.

NEW

September Production Close to 200,000

N.A.C.C. Members Make Gain of 190% Over September 1932. Nine Months, 1,294,584 Units

NEW YORK—According to the preliminary production figures of the National Automobile Chamber of Commerce, the output of complete vehicles by members during the month of September was 139,153 as against a corresponding figure of 47,897 for September of a year ago.

This estimate is based upon reports of factory shipments of manufacturers belonging to the N.A.C.C. and is not inclusive of Ford production, which is believed to be approximately 60,000 for the month. For the industry as a whole then it would appear that production for the month just passed will be approximately 200,000.

The production of N.A.C.C. members in September of this year shows an increase of 190 per cent over last September and a decrease of 20 per cent from August, 1933.

The nine months' total production of N.A.C.C. members is 1,294,582 units, which represents an increase of 54 per cent over the corresponding period of last year. At the end of nine months, production of Chamber members is 32 per cent ahead of the production for the whole of 1932.

Littlefield Named Brake Lining Assn. Manager

CAMBRIDGE, MASS.—Walter Joseph Littlefield has been appointed manager of the Brake Lining Manufacturers Association, Inc., succeeding W. J. Parker resigned, according to an announcement by Bradley Dewey, president of the association.

Johnson Asks Chrysler to Investigate Auto Strikes

WASHINGTON—Walter P. Chrysler has been asked to make an investigation of labor difficulties in the automotive industry by General Hugh S. Johnson, Recovery Administrator.

October Schedules Lower but Make Total of 2,000,000 in 1933 Practically Certain

Model Changes and Strikes Expected to Put October Output at about 125,000, a Gain of 133 Per Cent on Last Year—Ford Strike Cuts September Production

by Athel F. Denham

Field Editor, Automotive Industries

DETROIT—Final estimates on September production for the industry place the total figure as slightly below 200,000, as the result partially of strikes in some plants, particularly Ford Motor Company in Chester and Edgewater, together with somewhat slower production schedules on the part of some manufacturers just getting into production on new models. September production totals were effective in producing a third quarter total for the industry slightly in excess of the second quarter.

October schedules will show the first important curtailment in production schedules since last February, and at this time are estimated to show a total for the month of roughly 120,000 to 125,000 units. When this total is compared with production in October, 1932, however, it represents an even better percentage comparison

than the last few months. In October last year less than 52,000 units were produced in the United States and Canada. Present schedules, therefore, would call for an increase of roughly 133 per cent over last October.

Much of the decline in schedules, of course, will be due to either partial or complete shut-down during the month by a number of important producers for model change-overs. The above estimate includes in one or two cases limited schedules during the last week or ten days of the month on new models for introduction to the public in November. It is possible that these schedules may be curtailed somewhat, due to current tool and die makers' strikes, but the effect on the total should not be material in character.

September and October schedules
(Turn to page 439 please)

Presidents' OK Puts Dealers Under Code

Provides Sliding Scale Used Car Mark-Down and New Car Price Maintenance

NEW YORK—President Roosevelt signed the code of fair competition for the motor vehicle retailing trade, Oct. 3, and it became effective on that date.

The code, as approved by the President, contained numerous revisions and additions to the draft considered at the public hearing, but none of these alterations affected the fundamentals which dealers considered essential. A summary of the changes and salient features follows:

The code covers new and used car dealers and their service business, and exclusive used car dealers are represented on the administrative committee.

The "merit" clause was eliminated.

Maximum hours were reduced from 48 to 44. Commission salesmen, watchmen and salaried employees receiving \$30 per week or more are excepted. All hours that employees are available for work, are to be included.

Minimum wages follow the President's Reemployment Agreement. Salesmen are to receive minimum drawing accounts ranging from \$17.50 per week down to \$10.00 on a population basis. The minimum for mechanics is established at 50 cents per hour.

Trucks rated at more than $\frac{3}{4}$ ton are not covered by the code.

Used car allowances are to be not more than 5 per cent less than the established average selling price on cars of the current and preceding series, not more than 10 per cent below on the next preceding series, and not more than 15 per cent below on all others. The NADA is charged with the responsibility of publishing used car guides. In arriving at averaged selling prices, the lowest 20 per cent of reported sales are not to be included.

Cutting new car delivered prices is
(Turn to page 438 please)

Strikes Cause Postponement of Show Drawing to Oct. 12

NEW YORK—Labor troubles engaging the attention of car maker executives, caused the postponement of the annual drawing for space at the New York and Chicago Shows, originally scheduled to be held at the N.A.C.C. headquarters here on Oct. 5. The drawing will be held in the General Motors Building in Detroit on Oct. 12 and will follow a members' meeting in the morning of that day and a meeting of the directors on the preceding day.

Codes and their effects will be a major subject of discussion at the meeting. Labor problems and troubles will be considered as will the effects of the motor vehicle retailing code approved this week by President Roosevelt.

Charles E. Thompson

WASHINGTON, D. C.—Charles E. Thompson, president of Thompson Products, Inc., died here Oct. 4, following a paralytic stroke Saturday shortly after his arrival to participate in code activities. He was 63 years old.

Widely known in the automotive field, his efforts to promote aeronautics brought him national fame as the donor of the Thompson Trophy awarded annually to the fastest land plane. He was born in McIndoes Falls, Vt.,

and his first business connection was with the Thompson-Houston Electric Works. In 1892, he went to Cleveland and began the climb which finally made him one of the country's important industrialists.

New Nash Line Priced at \$745 to \$2,055

KENOSHA, WIS.—A six and two eights will make up the Nash line for 1934. The new cars are now on display at the Century of Progress, Chicago. Price range on the Six, which will have twin ignition, is \$745 to \$795. The Advanced Eight will range in price from \$1,045 to \$1,085 and the Ambassador Eight from \$1,575 to \$2,055.

Murray Strikers Return

DETROIT—The backbone of the strike called by the I.W.W. at the plant of the Murray Corp. of America seems to have been broken with workers returning to work about as fast as they can be assimilated. Returning workers are being put through the employment department it is understood for a careful check on their working history. This strike at its peak involved approximately 1200 men, and is distinct from the tool and die-makers' strike called by the Mechanics Educational Society.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Retail sales during the last half of September showed a moderate downward trend, although there is usually a seasonal upturn at that time. However, the gains in retail business during the several weeks preceding were substantial; and in many sections sales last week were considerably above those in the corresponding period last year. Many hold the view that a late seasonal rise in industry and trade resulting from public works and related measures will bring business activity to a new high for the year. The most serious drawbacks to business at present are the uncertainty attending the Administration's possible monetary policies for the near future and the unsettlement arising out of the spreading strike movement in labor circles.

Anticipate Freight Loadings Jump

Estimates recently compiled by the Shippers' Regional Advisory Boards anticipated an average increase in railway freight loadings during the last quarter of this year of 15 per cent above the actual level in the corresponding period in 1932.

Business Outlook Brighter

Recent reports issued by the Federal Reserve Bank of New York indicate definite improvement in that district during August. Wholesale trade was 52 per cent above that a year ago; chain store sales, with an increase of 6 per cent, registered the most favorable year to year comparison since

April, 1930; and department store sales were 8½ per cent higher.

Power Production Strong

Production of electricity by the electric light and power industry in the United States during the week ended Sept. 23 was 9.9 per cent above that a year ago.

Imports Exceed Exports

Exports from the United States during August amounted to \$131,000,000, as against \$144,194,000 during the preceding month and \$108,599,000 a year ago. Imports totaled \$155,000,000, as against \$143,000,000 during July and \$91,102,000 a year ago.

Wholesale Prices Decline

Professor Fisher's index of wholesale commodity prices for the week ended Sept. 30 showed a very moderate decline from the new high for the current movement established during the preceding week. The index, at 71.4, compared with 71.6 the week before and 71.1 two weeks before. This index stood at 62.2 a year ago.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended Sept. 27 showed increases of \$3,000,000 in holdings of discounted bills and of \$36,000,000 in holdings of government securities. Holdings of bills bought in the open market remained unchanged for the sixth successive week. The reserve ratio on Sept. 27 was 66.1 per cent, as against 66.4 per cent a week earlier and 66.8 per cent two weeks earlier.

Norway to Have Show in April

OSLO, NORWAY—An automobile show will be held here, April 14 to April 22, 1934, under the auspices of the Norges Automobile-Forbund (Norwegian Automobile Association) according to announcement just made by Audun H. Telnaes, editor of *Motortidende*, official publication of that organization.

Both the Norwegian Government and the City of Oslo will cooperate to make the exhibition successful, the announcement states. It is expected to

be the largest of its kind ever held in Norway. All branches of the automobile and motorcycle industries will be represented, as will the parts, accessory and shop equipment fields as well.

Cunningham Joins Standard Oil Company

NEW YORK—R. R. Cunningham, formerly manager of Marketing Developments for the Hudson Motor Car Co., has joined the Standard Oil Company of Penna. to handle sales promotion and sales training activities.

Illinois C. C. Radically Restricts Bus Speed

CHICAGO—A blow at motor bus operation in Illinois was dealt yesterday with the announcement by the State Commerce Commission of severe restrictions on speed effective Oct. 1.

Speed limits fixed by the new regulation follow: Ten miles an hour in business districts; fifteen miles an hour in residential districts; twenty miles an hour elsewhere in corporate limits and twenty-five miles an hour on rural highways. On curves the limit is 8 miles an hour.

Chester Moore president of the Illinois Bus Operator's Association, declared enforcement of the new rules would mean the ruination of the common carrier passenger bus business.

W. F. Lennon, attorney for the Greyhound lines, declared that the low speeds would prove a hazard rather than a safety measure in traffic. He stated that the slow-moving bus would block traffic and cause congestion. He cited the record in Connecticut, where the bus is permitted to move with other traffic. In that state, he observed, the lowest highway accident record of any state is maintained.

Under present laws in Illinois the maximum speed on highways is 40 miles an hour and local ordinances govern speeds in municipalities. Several bills were introduced at the last session of the legislature to place more severe regulation on business. The motor carriers charged that these were inspired by the railroads, and the bills were defeated.

Employment Rises But Real Wages Decrease

NEW YORK—An increase of 8.6 per cent in the number of persons employed and an advance of 9.2 per cent in average hourly earnings, accompanied by a decline of 8.9 per cent in average hours of work per week during the month of August were the outstanding developments in manufacturing industry, according to the regular monthly survey made by the National Industrial Conference Board.

Average hourly earnings of wage-earners in 25 manufacturing industries reporting to the Conference Board rose from 45.5 cents in July to 49.7 cents in August, or 9.2 per cent, while average hours of work per week fell from 42.6 to 38.8, or 8.9 per cent. The net result of these two developments was a slight rise of 10 cents, or 0.5 per cent, in average weekly earnings, which were \$19.15 in July and \$19.25 in August. Since, however, the cost of living rose relatively more between these two months than did average weekly earnings, real weekly earnings declined 18 per cent.

Exports, Imports and Reimports of the Automotive Industry For August and Eight Months Ended August, 1933-32

	August 1933		August 1932		Eight Months Ended August 1933		Eight Months Ended August 1932	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories.....		\$8,051,309		\$5,054,311		\$57,106,323		\$56,996,337
Motor trucks, buses and chassis (total).....	3,792	1,708,528	2,044	886,626	23,699	10,506,547	16,134	7,465,657
Under one ton.....	455	125,773	218	64,307	2,666	764,472	1,724	460,767
One and up to 1½ tons.....	2,802	1,043,760	1,641	659,114	17,984	6,681,883	12,550	4,987,935
Over 1½ tons to 2½ tons.....	370	301,147	143	118,458	2,277	1,810,051	1,361	1,115,902
Over 2½ tons.....	144	299,943	33	42,080	588	1,146,529	499	901,053
PASSENGER CARS								
Passenger cars and chassis.....	6,516	3,241,206	2,893	1,583,357	45,682	22,189,158	31,599	17,120,349
Low price range \$850 inclusive.....	6,043	2,710,973	2,585	1,263,074	42,433	18,504,528	27,233	13,073,259
Medium price range over \$850 to \$1,200.....	259	248,409	166	153,940	1,877	1,810,062	2,802	2,669,240
\$1,200 to \$2,000.....	110	160,355	64	86,593	788	1,176,518	1,045	1,377,850
Over \$2,000.....	35	96,180	24	61,862	213	556,232	519	1,355,615
PARTS, etc.								
Parts except engines and tires.....								
Automobile unit assemblies.....		1,456,318		1,231,488		12,784,539		16,337,792
Automobile parts for replacement (n.e.s.).....		1,072,395		968,766		7,439,701		9,015,660
Automobile accessories.....		150,496		91,864		1,060,068		1,406,763
Automobile service appliances.....		84,696		86,819		596,686		1,166,229
Airplanes, seaplanes, and other aircraft.....	68	867,916	40	344,630	302	4,200,555	106	994,589
Parts of airplanes, except engines and tires.....		20,970		140,796		165,840		709,128
INTERNAL COMBUSTION ENGINES								
Stationary and Portable:								
Diesel and Semi-Diesel.....	3	2,140	1	436	18	60,443	26	127,334
Other stationary and portable:								
Not over 10 hp.....	401	20,863	453	20,160	1,888	123,444	2,899	178,956
Over 10 hp.....	38	22,303	79	34,336	460	198,429	515	273,404
Automobile engines for:								
Motor trucks and buses.....	156	26,297	40	9,122	1,470	191,017	1,547	248,431
Passenger cars.....	1,688	92,414	1,258	73,186	15,632	966,132	17,445	1,334,783
Aircraft.....	332	124,664	58	119,628	1,465	817,974	1,080	675,843
Accessories and parts (carburetors).....		77,531		79,603		638,774		856,201
IMPORTS								
Automobile and chassis (dutiable).....	50	42,094	46	11,288	307	163,689	304	173,460
Other vehicles and parts for them (dutiable).....		20,118		5,386		72,765		33,094

Eaton Mfg. Declares Twenty-Cent Dividend

CLEVELAND—Directors of the Eaton Mfg. Co. have declared a dividend of 20 cents a share on the outstanding stock of 695,854 shares. The last previous dividend was 12½ cents paid on May 1, 1932. The dividend is payable Nov. 15 to stockholders of record Nov. 1.

Following the directors' meeting, J. O. Eaton, chairman of the board said: "The company has had a substantial improvement in business since March and prospects continue favorable. Net earnings in the second quarter were \$268,000, and it is indicated that the net for the third quarter will be about the same."

Jardine Goes to Foreign Shows

CLEVELAND—Robert Jardine, chief engineer of the Wilcox-Rich Division of the Eaton Mfg. Co. sailed for Europe last week to attend the London and Paris shows. He will return during the latter part of November.

Globe Steel Tubes Show Improvement

MILWAUKEE—Increased and well sustained automotive business and a pickup in other lines are keeping the Globe Steel Tubes Co. plant here busy at close to capacity and a healthy

backlog has been built up. As the result of improved business and NRA, 100 men have been added in recent weeks, increasing the payroll to 625, working four 6-hr. shifts. The number at work is the largest in three years or longer.

The Production and Factory Equipment Issue

of
Automotive Industries

will be published

October 28th

It will contain a complete, illustrated survey of all new production and plant equipment—
"A Great Machine Tool and Plant Equipment Show in Type."

Dodge Makes Changes In Field Personnel

DETROIT—Dodge Bros. Corp. has reported the following changes in district personnel:

George Mullin, formerly Los Angeles district representative, has been transferred, in like capacity, to the Portland district of the San Francisco region, succeeding C. L. Voss, who in turn has been transferred to the Los Angeles district.

R. M. Coffey has been appointed truck representative in the Greensboro and Charlotte districts of the Atlanta region, with headquarters in Charlotte.

A. B. Morgan, formerly special representative traveling out of the company's home office, has been made truck representative in the Washington district of the New York region, with headquarters in the national capital.

Russell Moehn has been appointed truck representative in the Memphis and St. Louis districts of the St. Louis region, with headquarters in St. Louis.

Defiance Plugs, Inc. Reports Gains

DEFIANCE, OHIO—Defiance Spark Plugs, Inc., report that production has gradually been stepped up to meet increased sales and is now approximately 200 per cent above the August level. Sixty per cent more employees are on the payroll than during the first quarter.

U. S. Asks MEMA to File Oil Code Brief

Lack of Official Ruling Hurts Companies Selling Through Auto Wholesalers

WASHINGTON, D. C.—The Motor & Equipment Manufacturers Association has been asked to file a brief with Norman S. Meyers, of the Department of Interior, setting forth the position of garage equipment and petroleum lubricant manufacturers distributing through automotive wholesalers, whose distribution would be jeopardized by a literal interpretation of certain sections of the oil code.

As pointed out in *AUTOMOTIVE INDUSTRIES* of August 26, these sections raise a question as to whether under the oil code automotive wholesalers can distribute petroleum lubricants and certain important items of garage equipment which are proscribed for petroleum wholesalers. The interpretation placed on these sections by the Planning and Coordinating Committee of the Petroleum Industry is the literal one that an automotive wholesaler handling petroleum products is a petroleum wholesaler and as such cannot sell the proscribed equipment. The Committee takes the attitude that the petroleum industry is getting out of the garage equipment business and that it is fair to ask that the automotive jobber get out of the petroleum business. Incidentally, requests for interpretations addressed to Oil Administrator Ickes are being turned over to the Planning and Coordinating Committee and it may be assumed that the Committee's interpretations will be from the standpoint of the oil industry.

To clarify the situation, which is already upsetting established business relations, MEMA is expected to file a brief requesting an official interpretation by the government and, if the interpretation is the literal one, to request revision of the code. Public hearings would then be held on the proposal.

One "out" for the jobber, of course, is to organize a separate company to handle either the oil or shop equipment business.

President OK's Dealers' Code

(Continued from page 435)

forbidden. Delivered prices are to include car and equipment at list price, all taxes, average cost of transportation, actual handling cost plus not to exceed 90 days interest on freight.

Cutting financing charges is prohibited.

Provision is made for cleanups.

Selling cars for resale in other dealers' territories is prohibited.

Parts, accessories and supplies are to be sold at list prices including

taxes, and discounts are to be given only to authorized dealers, etc., or established service stations operating under any NRA code. In the original draft only dealers and authorized service stations could get discounts.

Dealers must see that speedometers on new cars are connected before using the car for any purpose and disconnecting the speedometer is made unfair competition.

Pessimistic on Labor Outlook

"I'm pessimistic on the labor situation in the automotive field," one of the industry's most important executives told *AUTOMOTIVE INDUSTRIES* this week. "I don't blame the workers, because they have been misled by labor leaders and some government officials. In my opinion, so long as the false idea is actively promoted that there is only a fixed amount of work out of which all labor must get a living, we are going to have trouble. Moreover, unless there is an early settlement of the Michigan difficulties with the tool and die-makers, the industry's 1934 new model program will be jeopardized."

Charles Piez

CHICAGO — Charles Piez, chairman of the board of the Link-Belt Company died on Oct. 2 of pneumonia in the Garfield Hospital, Washington, D. C. Mr. Piez was 67.

Mr. Piez, a close friend of President Roosevelt directed the work of the Emergency Fleet Corporation during the war, being selected for the post by Edward N. Hurley, then chairman of the U. S. Shipping Board. He acted first as chief executive of the enterprise and later succeeding Charles M. Scwab as director-general. He resigned in May, 1919.

Mr. Piez was a past president of the American Society of Mechanical Engineers and twice was president of the Illinois Manufacturers' Association. He was at one time president of the Commercial Club of Chicago. He is survived by the widow, Laura Sadler Piez.

John Yagerlener

DETROIT — John Yagerlener, 48 years old, a mechanical engineer employed by the Gemmer Manufacturing Co., died Sept. 30. He had been connected with Gemmer for 20 years.

White Made D.S.M.

BALTIMORE, MD.—A. T. Hunt, sales manager of the Eastern Rolling Mill Company, announces that A. Campbell White has been appointed district sales manager for Texas.

U.S. Will Publish Car Sales Indexes

Fast Compilations to Be Made on Regional Basis

WASHINGTON—Automobiles are included in one of the retail lines to be studied by Dr. Willard L. Thorp, director of the Bureau of Foreign and Domestic Commerce, as an aid in tracing the movement of goods into the hands of consumers, especially during the present emergency. Announcement was made Oct. 4 by Secretary of Commerce Roper the plan proposes to set up a group of monthly indexes of sales volume in the more important fields of retail trade, and in addition to automobiles, it embraces groceries, limited price variety goods and rural and small town general merchandise. Dr. Thorp said the project has been initiated at the immediate request of the Executive Council and Central Statistical Board.

Steps will be taken to obtain sample data that will provide the basis for the construction of indexes of dollar sales volume in the foregoing fields of retail trade.

The setting up of the new retail sales indexes is being closely coordinated with the related activities of other government agencies such as the retail price figures of the Bureau of Labor Statistics, Department of Labor, and the department store sales index of the Federal Reserve Board.

Speed has been assured in the collection and organization of the data. Reports will be made by telephone and telegraph and will be promptly collated by the statistical force of the Bureau of Foreign and Domestic Commerce. It is expected that the indexes will be available for publication within two weeks of the close of each month.

APEM-MEMA Agree on Code Authority Committee

CLEVELAND—A code authority committee for the administration of the parts and equipment code was agreed upon at a meeting of committees representing A.P.E.M. and M.E.M.A., held here on September 29. As a consequence, the M.E.M.A. withdrew its protest and suggestion to General Johnson as reported in last week's *AUTOMOTIVE INDUSTRIES*.

The code authority committee now consists of six members and the following individuals were named to the places:

Name	Company	Member of
C. S. Davis	Borg-Warner	APEM-NSPA
J. H. Williams	J. H. Williams & Co.	APEM-MEMA
		NSPA
C. E. Wilson	General Motors	APEM-MEMA
C. C. Carlton	Motor Wheel	APEM-MEMA
C. L. Barnes	Houdaille-Hershey	APEM
C. P. Brewster	K-D Mfg. Co.	MEMA-NSPA

All supplemental codes are to be self-governed by the responsible product group.

New Car Registrations Pass '32 in September

August Car and Truck Totals Nearly Double Last Year

DETROIT—Registrations of new passenger cars in the United States this year through the middle of September exceeded the sales total for all of 1932. August total new car registrations compiled from all of the 48 states and the District of Columbia reached 178,661, it was revealed in the weekly motor car sales report issued by R. L. Polk and Co. This brought the total for the first eight months of 1933 to 1,046,688, only 50,000 short of the sales of 1,096,245 in all of 1932.

The August total of 178,661 was 91.2 per cent greater than the 93,457 units registered in August a year ago,

this monthly gain being the largest yet recorded this year. However, it was 3.8 per cent below the 185,660 registrations total in July this year.

Registrations of new motor trucks in August totalled 28,807, a gain of 91 per cent over the 15,081 units registered in August, 1932, and a loss of 6 per cent from the 30,642 units registered in July this year.

John Clifton Henderson

HARRISON, N. J.—John Clifton Henderson, who died last week, in his 56th year, was the inventor of cast Nichrome which is used in the form of carburizing containers in many automotive plants. Mr. Henderson for the past 20 years has been consulting engineer for the Driver-Harris Company.

October Schedules Lower

(Continued from page 435)

bring total production for the industry to roughly 1,850,000 units, making it almost certain that the 2,000,000-mark will be exceeded for the year of 1933. Companies having a better third than second quarter total include Chevrolet, Ford, Dodge, DeSoto, Hudson and Packard.

John W. Scoville reports sales by Chrysler Corp. dealers for week ending September 30 as exceeding 13,300 new cars, nearly five times the same period last year, and the best week's business in more than five years. Preliminary used car delivery reports indicate a new all-time high also.

Chevrolet September production is estimated as within few hundred units of 60,000.

Hupp September shipments, totaling 435 units, represent a 12 per cent increase over September last year.

Packard September production was roughly 300 per cent ahead of September last year with retail deliveries approximately 30 per cent ahead, according to preliminary estimates.

Studebaker-Pierce-Arrow Export Corporation truck shipments for September were largest since August, 1931. Export shipments of White trucks by this company reached highest peak since April, 1931.

Sales of Dodge passenger cars for the week ending September 30 totaled 3069, as compared with 2399 the preceding week. Truck sales jumped from 1035 to 1563. Total unit sales by Dodge dealers including Plymouth was the biggest since last week in July, 1926.

Shipments of Continental automobiles were higher in August than during any month since the company entered the motor car business, according to Henry Krohn, vice-president in charge of sales.

Buick retail sales during the second

10-day period of September showed exactly 100 per cent more business than in the corresponding period of last year, according to W. F. Hufstader, Buick sales manager. Mr. Hufstader further stated that current orders continue to reach the sales department in volume and the probabilities are that September will have established a new high record in the month-to-month comparison with 1932.

Packard export orders and shipments for the first nine months of 1933 exceeded in number all orders and shipments made through the export company during the whole year of 1932. Dollar volume of Packard's export business also has increased greatly. Export orders received during the first 20 days of September totaled more than 10 per cent of the totaled scheduled production of the company for the whole month.

Retail deliveries by Pontiac dealers during the last 10 days of September showed an 18 per cent gain over the second ten. Sales for the month are estimated as being not much below 8,000 units. On Sept. 20, Pontiac retail sales were 30,242 ahead of the 1932 total for the same period, a 74 per cent gain.

Oldsmobile retail deliveries during the last 10 days of September showed an increase of 10 per cent over second 10 with total sales for month in the neighborhood of 3,500. Plymouth shipments for September totaled 33,395.

Sales of Cadillac and LaSalle cars for the second 10 days of September were 55 per cent greater than for the first 10 days of that month, and 6 per cent better than the second 10 days of August. September sales are expected to be the fourth consecutive month that sales have exceeded the corresponding 1932 months.

Fourth Quarter Steel at Third Quarter Price

Code Provisions Make Automotive Buyers Ask for Detroit Base Price

NEW YORK—Conditions in the steel market could hardly be more puzzling than they are at the beginning of the year's final quarter. It is known that before higher prices on steel bars, plates and shapes went into effect on Sept. 30, mills booked heavy orders for these products. The general impression is that with what steel is now being received by them plus the tonnages due them on old price contracts, automotive consumers will be more adequately provisioned for the current quarter than they have been in some time. To what extent they have availed themselves of the form of Code contract which permits stepping up of the tonnage entailed remains to be seen, as do so many other developments under Code procedure. Until it is possible to change human nature by legislative fiat, individual mills will always go out of their way to please those whom they consider good customers. These have been able to virtually cover all of their fourth-quarter bar requirements at third quarter prices. Others may not have been so fortunate. The Code ideal of one price to all steel consumers within one certain class without any concessions for volume, which ideal has come in for the most severe criticism on the part of large automotive consumers, is obviously subject to modification during the interim period between price changes. It also makes it difficult to even approximately estimate when consumers as a whole will begin to work up higher price steel. Elimination of trucking of steel by automotive buyers from steel mills under Code regulations has revived agitation for Detroit base prices on all descriptions of steel produced in that district, with a view to bringing down freight extras. Reports that the Ford steel plants may resume activities are met in the steel market with the comment that, if the Ford properties could not be operated profitably during the low cost period, they could hardly be expected to prove advantageous with wages and material costs much higher and steadily rising.

Pig Iron—In some of the Middle West markets automotive foundries having iron coming to them at lower prices have been given an extension of time to permit their issuing shipping orders. Fresh business is mostly of the single carload sort. Prices are unchanged.

Aluminum—The market for both virgin and secondary aluminum remains unchanged. Automotive consumers are keenly interested in what the effect of proposed Codes will be on piston prices.

Copper—Differences of opinion over Code details between the larger producers and the custom smelters continue to delay agreement on a lawmerchant for the industry pending which the market is marking time.

Lead—Firm and unchanged.

Zinc—Quiet and steady.

Motor Vehicle Registrations

First Seven Months 1933 and 1932 Compared

State	Passenger Cars		Per Cent Change	Total Motor Vehicles		Per Cent Change
	1933	1932		1933	1932	
Alabama*	161,620	.....	.....	190,292	215,871	-11.8
Arizona	70,496	76,981	-8.2	87,789	92,703	-5.3
Arkansas	139,801	.....	.....	169,278	.....	.....
California	1,787,414	1,820,278	-1.7	1,994,414	2,019,946	-1.1
Colorado	219,409	241,561	-9.1	240,870	267,403	-9.8
Connecticut	261,754	271,320	-3.5	321,784	327,887	-5.0
Delaware	39,260	41,150	-4.5	49,068	51,478	-4.7
Dist. of Col.	123,908	133,314	-7.0	149,937	159,759	-6.0
Florida	219,678	236,366	-7.0	277,386	281,251	-1.5
Georgia	257,422	230,164	+11.8	311,424	276,993	+12.3
Idaho	71,197	73,946	-3.6	89,543	93,606	-4.3
Illinois*	1,124,286	1,212,249	-7.2	1,271,979	1,345,711	-5.5
Indiana	597,705	637,156	-6.2	695,882	741,953	-6.2
Iowa	552,542	611,003	-9.6	617,614	687,135	-10.1
Kansas	417,596	414,988	+0.5	486,322	485,354	+0.2
Kentucky	236,908	247,976	-4.5	265,300	276,894	-4.1
Louisiana*	.....	.....	.....	207,249	222,752	-6.8
Maine	120,301	127,910	-6.0	148,930	157,003	-5.2
Maryland	252,166	261,873	-3.6	296,658	309,841	-4.1
Massachusetts	643,732	658,382	-2.3	740,329	760,240	-2.6
Michigan	945,885	951,905	-0.6	1,122,901	1,137,021	-1.1
Minnesota	542,905	568,373	-4.3	631,521	668,073	-5.3
Mississippi	.....	.....	.....	.....	.....	.....
Missouri	513,902	553,154	-7.1	599,040	635,324	-5.6
Montana	77,591	88,647	-12.4	101,937	109,129	-6.4
Nebraska	280,103	293,134	-4.5	328,037	368,578	-10.8
Nevada	19,742	22,441	-12.0	25,332	28,943	-12.4
New Hampshire	.....	.....	.....	99,199	100,422	-0.8
New Jersey	679,872	675,732	-0.9	797,201	795,606	+0.2
New Mexico	56,036	58,662	-4.5	70,433	73,501	-4.3
New York	1,794,687	1,807,464	-0.5	2,117,187	2,176,786	-2.8
N. Carolina	.....	.....	.....	352,839	361,850	-2.5
N. Dakota	122,275	126,665	-3.5	145,033	149,741	-3.0
Ohio	1,312,035	1,391,150	-5.8	1,510,202	1,598,483	-5.4
Oklahoma	355,895	354,630	+0.2	407,262	397,656	+2.5
Oregon†	186,627	98,150	+90.0	214,623	108,480	+98.3
Pennsylvania	1,316,139	1,384,109	-5.0	1,530,265	1,595,251	-4.0
Rhode Island	110,136	108,301	+1.5	129,423	128,290	+0.9
S. Carolina	134,371	145,858	-8.0	155,518	168,555	-7.7
S. Dakota	138,430	134,777	+3.0	158,694	151,548	+4.8
Tennessee*	.....	.....	.....	255,264	271,633	-5.9
Texas	898,601	932,955	-3.6	1,073,789	1,119,958	-4.1
Utah	75,500	77,900	-3.0	99,000	102,400	-3.3
Vermont	55,196	61,044	-9.5	62,193	68,671	-9.7
Virginia	242,909	250,558	-2.8	280,036	293,905	-4.6
Washington	344,086	365,362	-5.7	412,013	439,039	-6.1
West Virginia	171,000	180,700	-4.8	201,402	212,938	-5.6
Wisconsin	526,900	575,100	-8.4	600,854	655,089	-8.3
Wyoming*	39,881	46,514	-14.2	47,243	56,226	-16.0
Total	18,237,900	18,549,932	-1.6	22,140,489	22,746,876	-2.5
Total†	17,936,479	18,549,937	-3.2	21,971,211	22,746,876	-3.4

* Actual data for six months—estimated for one month.

† Only one month data due to year ending June 30th. Large increase due to reduction in registration fee.

‡ Exclusive of states for which 1932 data are not available.

State Motor Taxes Near Total Road Outlay

WASHINGTON, D. C.—Special motor vehicle taxes collected in 1932 were almost equal to all state highway expenditures that year, including emergency increases in construction outlays, and interest and principal payments on bonds, according to the U. S. Bureau of Public Roads.

State highway income in 1932 amounted to \$794,000,000 derived as follows: special motor taxes 72.4 per cent; Federal Aid 17.3 per cent; state appropriations and taxes 4 per cent; miscellaneous 3.3 per cent and local funds 3 per cent.

But 12 states levied any property tax for state roads, and but 11 states made any appropriation from the general fund.

Expenditures totaled \$817,000,000, with 67.5 per cent going to new construction, 20.7 per cent for maintenance, 8.5 per cent to pay interest

charges, 2.7 per cent for machinery and equipment and .6 per cent for miscellaneous purposes, exclusive of \$54,000,000 in bond principal retirements, some transfers to counties (offsetting receipts from counties in the aggregate), and about \$50,000,000 in other obligations.

Special motor taxes last year were \$838,000,000, while the amount of such taxes earmarked as state highway receipts totaled \$575,000,000.

Findlay Elected Vice-President by Starrett

ATHOL, MASS.—Following the annual meeting of the stockholders of the L. S. Starrett Co., Sept. 20, 1933, directors elected David Findlay vice-president. Mr. Findlay has been general sales manager for many years and will continue to serve in that capacity in addition to assuming the duties of vice-president.

P.R.R. to Extend Store-Door Service

NEW YORK—W. W. Atterbury, president of the Pennsylvania Railroad, has issued details of the store-door delivery service which is soon to be provided by his company throughout the territory which it covers.

Under the plan the Pennsylvania will collect and deliver less-than-carload merchandise, up to 260 miles, on request, at existing rail rates. There will be a minimum charge of 35c. for 100 lb. or 50c. for individual shipments. A sliding scale of charges applies to hauls of more than 250 miles. These charges are in addition to the station-to-station rate and will reach a maximum of 8c. for each 100 lb. at or about 400 miles. Shipments may be prepaid or sent C.O.D.

A service of this kind is now provided by the Pennsylvania in the New York area and in Long Island, through the L. I. Railroad. Similar services are offered between Philadelphia and Camden, Wilmington, Baltimore and a few other points.

Following the announcement of the Pennsylvania, came one from the Chicago, Burlington & Quincy Railroad to the effect that it will offer store-door delivery soon, providing the service with its own trucks where traffic warrants and in other places employing independent truckmen or the Railway Express Agency.

Propose New Plan of Compulsory Insurance

NEW YORK—Compulsory automobile insurance, with compensation for personal injuries handled along lines similar to workmen's compensation, is advocated in a study published by the Columbia University press. Removal of much liquidation from the courts and more certain and equitable compensation for the injured are among the advantages claimed.

Absolute liability would be placed on owners of motor vehicles and compensation for injury would be limited much as in the case of workmen's compensation claims. The question of responsibility would not be considered.

R. C. Graham Goes to Europe

DETROIT—Robert C. Graham, executive vice-president of the Graham-Paige Motors Corp., sailed recently for a two months' business tour of Great Britain and the Continent. Mr. Graham plans to attend the Paris and London Automobile Shows and to study the advancements made during the past year in continental motor car engineering and styling. On Oct. 10 Mr. Graham will preside at a dinner of Graham dealers from various parts of Europe to be held in Paris.

Roads Bureau Tax Survey Nears End

WASHINGTON—Complete information on taxation of all kinds of vehicles collected by all jurisdictions will be available to the President's Transportation Committee when the Bureau of Public Roads, Department of Agriculture, shortly completes a comprehensive survey, now drawing to a close. Reports have been received from all but two states and the data are being summarized in the offices of the bureau in Washington.

Another department of the Govern-

ment, through Traffic Coordinator Joseph B. Eastman, has sent out a questionnaire to each state public utility commissioner as to the extent of motor carrier operations, experience in regulation of these carriers, and also seeking opinions as to the necessity for Federal regulation.

The views of the state commissioners are also being solicited regarding the possible administration of such regulation.

All of these moves are calculated to lay the groundwork for recommendations to Congress in January on the subject of motor carrier regulation.

New Eaton Merger Gives Us Eaton-Detroit Metal Co.

Easy-On Cap Division and Detroit Metal Specialties Co. Are Combined as Subsidiary

CLEVELAND—A merger of the Detroit Metal Specialties Co. of Detroit and the Easy-On Cap Division of the Eaton Mfg. Co. of Cleveland has been announced by J. O. Eaton, chairman of the board of the Eaton Mfg. Co. The new company, incorporated under the laws of Ohio, will be called the Eaton-Detroit Metal Company and the controlling interest will be held by the Eaton Mfg. Co. The main office will be in Detroit.

The plants of the combined companies in Detroit and Cleveland will continue operations. In Detroit the Detroit Metal Specialties Co. turns out small stampings, hub caps, deep drawn stampings, automobile trunks and stove fittings. The Easy-On Cap Division of the Eaton Mfg. Co. has for some time been a leading maker of caps for gas tanks, radiators and other purposes.

The officers of the new Eaton-Detroit Metal Co. are: J. O. Eaton, chairman; W. C. Ireland, former president of the Detroit Metal Specialties Co., president; Daniel Dewey, vice-president and F. A. Buchda, secretary and treasurer. The directors will be J. O. Eaton, C. I. Ochs, H. A. McGinn, W. C. Ireland and David Ireland. Joseph Shanahan, formerly factory manager of the Detroit Metal Specialties Co. will be the general factory manager in charge of both Detroit and Cleveland plants.

State Motor Vehicle Commissioners Form National Association

To Work for Uniform Operating Laws, Enforcement and Taxation. Baughman of Maryland, President

CHICAGO—What may prove to be an effective step in the promotion of uniform state motor vehicle operating laws is to be found in the organization of The American Association of Vehicle Administrators which was effected at a meeting attended by officials from 21 states, the District of Columbia and Ontario, Canada. This organization meeting followed the preliminary meeting in Detroit on June 27th.

The aims of the association as set forth in its by-laws are the promotion of uniform laws with regard to motor vehicle operation, uniform and reasonable taxation, uniform regulation and enforcement, the promotion of reciprocity among the states and between the United States and Canada and Mexico. It is a part of the association's program to conduct educational campaigns, to study traffic accidents and safety standards and to cooperate with federal and other organizations interested in such subjects.

Active membership in the association is open only to motor vehicle administrators, but their assistants are eligible for associate membership, and former state officials, technical experts and certain others may become honorary members. Offices will be maintained in Washington, D. C.

Officers were elected as follows: E. Austin Baughman, Motor Vehicle Commissioner of Maryland, president; George Wellington, Rhode Island, first vice-president and Eastern regional head; T. McCall Frazier, Virginia, second vice-president and Southeastern regional head; Orville E. Atwood, Michigan, third vice-president and Midwestern regional head; Russell Bevans, California, fourth vice-president and Pacific Coast regional head; Lew E. Wallace, Iowa, secretary and treasurer.

The following were elected members of the executive committee: Richard

Stickell, Pennsylvania; L. P. Harris, North Carolina; Frank Finney, Indiana; J. C. Bickell, Ontario; A. V. Denny, Arkansas. One other member will be named from the Northwest later.

The following states were represented at the meeting: Arkansas, Missouri, Pennsylvania, New Jersey, Maryland, Connecticut, Illinois, Louisiana, North Carolina, Virginia, New York, West Virginia, Maine, Michigan, Iowa, Kansas, Georgia, Rhode Island, Delaware, Indiana, Ohio, District of Columbia and Ontario, Canada.

Passenger Car Production by Wholesale Price Classes

(U. S. and Canada)

Eight Months 1933 and 1932 Compared.

	1933	1932	Per Cent Change	Per Cent of Total 1933	Per Cent of Total 1932
Under \$500	1,047,989	603,555	+73.6	81.6	63.9
\$501-\$750	180,338	225,614	-20.0	14.0	23.8
\$751-\$1000	25,339	67,759	-62.6	2.0	7.2
\$1001-\$1500	14,324	31,983	-55.3	1.2	3.4
\$1501-\$2000	7,247	6,953	+4.1	.6	.7
\$2001-\$3000	5,912	7,464	-20.8	.5	.8
\$3001 and over	1,352	2,013	-32.8	.1	.2
Total	1,282,501	945,341	+35.8	100.0	100.0

Truck Production by Capacities

(U. S. and Canada)

	1933	1932	Per Cent Change	Per Cent of Total 1933	Per Cent of Total 1932
Under 1½ tons	227,907	163,409	+39.2	93.0	92.4
2 to 3 tons	14,204	9,224	+54.0	5.8	5.2
3½ tons and over	2,112	3,311	-36.2	.9	1.9
Ambulances, fire, buses, etc.	835	839	-0.5	.3	.5
Total	245,058	176,783	+38.8	100.0	100.0

Detroit Gear Offers New Automatic Transmission

DETROIT—An automatic transmission of the shift-gear type is being announced by Detroit Gear and Machine Company, division of Borg Warner Corp. It is understood that the transmission is being offered both for original equipment and replacement installation. In addition to the automatic control effected by means of the accelerator pedal, manual control is available at all times to the driver. Shift into second speed from high when desired, at higher speeds than called for by the automatic device, is accomplished by depressing the clutch pedal.

Complete details of this transmission will be announced in these columns in a forthcoming issue.

Automotive Industry Too Risky for Bankers

WASHINGTON, D. C.—“If you relied on houses like ourselves you probably would not have had the automobile industry in this country,” Clarence Dillon, of Dillon, Read & Co., told the Senate Finance Committee this week. Continuing Mr. Dillon said: “There were men who would take those risks and ask the public to give their money to a new industry that was risky with the result that we do have a great industry in this country. And we, the smug, conservative bankers, now are very pleased to handle automobile securities.”

I. H. Company to Make Engines at Rock Island

CHICAGO—Engines for the International Harvester Company D-1 Trucks are to be manufactured in the company's Farmall Works at Rock Island, Ill., as soon as the present arrangement with the Willys-Overland Company, at Toledo, Ohio, is terminated. The change will result in recall of about 400 skilled workmen to the Farmall plant.

Plymouth Sales Increased In All States But One

DETROIT—According to a statistical report of Plymouth Motor Corp., sales increases over 1932 are shown in every state in the Union except one, with that single state showing sales exactly equal those of the previous year, comparing the first seven months of 1933 with the same period of 1932.

Nevada was the single state where no progress was recorded, exactly the same number of Plymouth cars were sold in that state in the first seven months of 1933 as in the same period of 1932.

Utah shows the greatest percentage increase for this period—662 new

Plymouths being sold there in this period this year—as compared with 121 for the same time last season—an increase of 447 per cent. Two hundred forty-nine per cent increase was shown in the State of Texas—where deliveries to customers totaled 4490 as compared with 1286 for last year.

Plymouth sales for the entire country show a 77 per cent increase for the first seven months of 1933 as compared with same period last year, the report continued. This year Plymouth is making increases that are double the gain of its two leading competitors combined.

\$50,000 Purse for 1934 Indianapolis Race

INDIANAPOLIS—Capt. E. V. Rickenbacker, president of the Indianapolis Motor Speedway, has announced the restoration of the basic prize purse of \$50,000, for the 500-mile race to be held next May 30. It is expected that consolation prizes added by the Speedway, cash lap prizes from the automotive industry and other purses will swell the amount to approximately \$100,000.

NRA Questions Price Control in Wholesalers' Code

WASHINGTON, D. C.—Public hearings on the automotive wholesale code probably will be held the latter part of the week of October 8 or early in the following week, despite earlier reports that they would be held the first part of the former week. It is understood that the code as revised in conference with NRA still covers the wholesale distribution of parts by car makers. The inclusion of resale price maintenance in the code, however, is being questioned.

Urges Larger Jobber Margins Under NRA

CHICAGO—E. T. Satchell, president of the Motor & Equipment Wholesalers Association, has named a committee of five to contact manufacturers with a view to increasing jobber margins under the NRA program. The committee is made up of J. M. Block, G. P. Henderson, R. P. Greene, A. W. Kleinschmidt and S. B. Dean.

President Satchell, in making the announcement, calls attention to the “growing tendency on the part of a good many manufacturers to make revisions in prices to compensate them for the added cost of doing business under the NRA program, without, at the same time, making adequate provisions for increase in jobber margins.” It is contended that such a policy will do damage to the jobber group within the industry and eventually react to the disadvantage of the manufacturer.

G.M.T. Gets Big Taxicab Order

PONTIAC—H. A. Prussing, vice-president in charge of the Taxicab Division of the General Motors Truck Co., has announced receipt of orders totaling over 1500 taxicabs from members of Radio Fleet Owners, Inc., New York City, one of the largest individual orders for taxicabs ever placed in the history of the company.

Delivery of the new taxicabs will begin on or before October 15 and the cabs will go in service at once.

President Signs Battery Code

WASHINGTON, D. C.—The code of fair competition for the electric storage battery and wet primary battery industry was signed this week.

CALENDAR OF COMING EVENTS

SHOWS

Paris Automobile Salon, Paris ..Oct. 5-15
London Automobile Show, London.Oct. 12-21
Automotive Service Industries Show, M.E.M.A., N.S.P.A., M.E.W.A., ChicagoOct. 30-Nov 4
English Truck Show, Olympia...Nov. 2-11
English Motorcycle & Cycle Show, OlympiaNov. 25-Dec. 2
New York Automobile Show, Jan. 6-13, 1934
Automobile Show, Los Angeles, Jan. 6-14, 1934
Chicago Automobile Show, Jan. 27-Feb. 3, 1934

CONVENTIONS

Accessory Branch—Natl. Hardware Association, ChicagoOct. 16-19
National Battery Manufacturers' Association, Sherman Hotel, Chicago, Oct. 19-21
Natl. Stand. Parts Assoc., Chicago, Oct. 27-28
International Power & Engineering Conference, New York City...Dec. 3-8

MEETINGS

American Petroleum Institute, Annual, ChicagoOct. 24-26
Natl. Automotive Parts Assn., Annual Meeting, ChicagoNov. 2-3
Commercial Motor and Transport Vehicle Exhibition, London, EnglandNov. 2-11
International Automobile Salon, Paris, FranceOct. 5-16
International Automobile and Motorboat Show, London, England, Oct. 12-21
American Gear Mfg. Association Semi-Annual Meeting, Wilkesburg, Pa., Oct. 17-18
Natl. Battery Mfg. Assoc. Meeting, Chicago, Ill.Oct. 19-21
Natl. Automobile Dealers Assoc. Meeting, New York CityJan. 8
Rubber Assoc. Meeting and Banquet, New York.....Jan. 8
S.A.E. Annual Dinner, New York...Jan. 8
S.A.E. Annual Meeting, Detroit...Jan. 22-25

Congratulations, N.A.C.C.!

On the 31st annual space drawing for the Automobile Shows.

On your consistent sponsorship of this constructive aid to your industry, and to all industry.

On your fighting spirit, your wise leadership, your progressive merchandising.

The cars at your 1934 shows will excel all past performance. We ought to know. Each year the requirements of your metallurgists and engineers grow more exacting; and we welcome the challenge which they offer.

We have been making alloy steels since the days of "the Merry Oldsmobile," the Ford "999," Mr. Chapin's pioneer ride from Detroit to New York, and other landmarks of the automotive age.

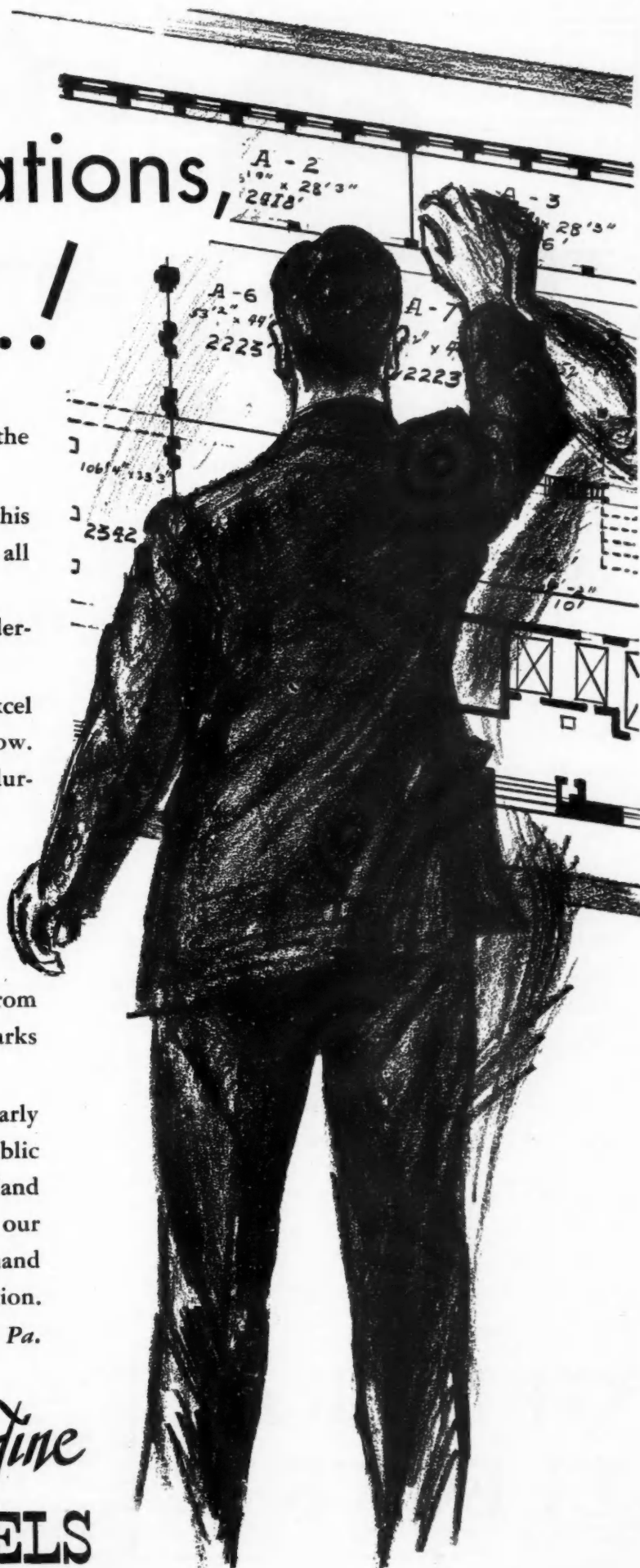
Throughout the years from those early times you have labored to give the public increasing value in its automobiles. Hand in hand with you we have developed our processes to meet the progressive demand for quality materials in motor transportation.

Bethlehem Steel Company, Bethlehem, Pa.

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Automotive Industries



October 14, 1933